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"Salvation of India lies in Cottages."

—*MAHATMA GANDHI*

FORTHCOMING GENERAL ELECTIONS

FOR the second time since Independence the country will go to polls between February 25 and March 14, 1957, and the poll will be completed within a period of 18 days or less in every State. About 193 million persons who are eligible to vote will be exercising their rights of citizenship to elect their representatives to the Lok Sabha and to the State Legislative Assemblies. The forthcoming elections will be on a bigger scale than the previous ones in the year 1951–52.

But curiously the election fever which should have been noticeable in the country by this time appears to be conspicuous by its absence. So far the interest of the people is concerned there appears to be an atmosphere of indifference and unconcern towards the coming elections than what it was on the eve of the last General Elections. This may be due to loss of vigour and strength of the opposition parties to offer challenge to the party in power or want of appreciation and interest of the people in the achievements of the ruling party or both. Obviously, absence of strong opposition is not only a serious drawback in the efficient working of our infant democracy but it is also likely to reduce elections into a lifeless and tame affair.

Lack of political consciousness among the electorates who comprise 85% of illiterate people and who are unable to assess the advantages of right of vote probably explains their apathy to elections. They seem to suffer from pathetic helplessness produced by centuries of unmitigated suffering and inertia and do not care to bother as to who governs them and how they are governed. A vast majority of them hardly realise the distinction between the British rule of yesterday and the Congress rule of today.

That leaves the election-field free and open to a class of professional politicians and power-mongers belonging to the ruling party who are mainly interested in elections and who aspire to places of power and profit through the election process. Of course, they are the people who are feverishly engaged in an unseemly scramble to secure election-tickets by all means within their power. The ticket-craze converted the last session of the Congress at Indore into an 'Election-fair'. And, it is widely reported that the delegates who attended it had hardly any interest in the proceedings of the Congress except to ascertain their chances of securing election tickets.

Congress victory at the polls in the next elections therefore is a foregone conclusion. Both at the Centre and in almost all States, the chances of Congress retaining power are certain. And mostly the same people who now hold power and sit in high places will be returned to continue the same policies and programmes as heretofore.

How and to what extent the return of the Congress to power a second time will be conducive to the betterment of the people's lot is a big question mark. Absence of convincing reply to this pertinent query probably explains the reason of their apathy towards the forthcoming elections. For despite tall talks of the First and the Second Five-Year Plans, the Congress-rule of the last 10 years does not seem to furnish convincing proof of noticeable inprovement in the lot of the common man, which is often claimed by the leaders of the ruling party. On the contrary, what they really feel is that life has become more difficult; the morals of the people have gown down; the administration has become more corrupt and hopelessly inefficient; the burden of taxation has enormously increased and the people are subjected to all sorts of sufferings and victimizations without getting redress from those who sit in places of high authority. Will the second term of the Congress rule furnish corrective to these legitimate grievances of the people?

It is difficult to answer this question in the affirmative. Similarly, taking the present day moral bankruptcy of the public and political life of the country into consideration and catastrophic fall in the character and morals of the people no other political party could be expected to give better account of itself if returned to power. That shelves the hope of something better and brighter to come in the next five years when the same party and the same people are to return to power to continue their old policies and programmes which have failed to satisfy legitimate aspirations of the people during the last ten years.

The present downward trend of public and political life and race for power and profit in the leaders of the ruling party must lead to some major national catastrophe sooner or later. The Congress party which is shaping the destiny of the nation and which is likely to continue to do so during the next five years, suffers from demoralisation of the worst type. In its rank and file, of course, with exceptions here and there, lust for power and personal profit has usurped the place of national service and advancement of the country. Self-seekers and flatterers are having their day while men of honesty and integrity of character are being pushed out of the organisation. Recently, a letter of resignation from the Congress of a Minister in Bihar Shri Ramcharitar Singh, published in the daily press reveals the extent of demoralisation that has crept in that organisation. It says:—

> "Men of high moral and intellectual attainments are being pushed out to make room for self-seekers and flatterers. Criticism is never permitted and is frowned upon. The whole atmosphere is growing suffocating for persons like me who were attracted to the great organisation by its moral grandeur and opportunity of self-less service. The method adopted at the time of selection of candidates threw in bold relief the symptoms of desease and revealed to what low level the organisation has fallen from its high pedestal. I am finding it impossible for a man of my temperament and character to continue in the organisation."

Of late there have been too many cases of desertion from the Congress reported from Madras and other States due to similar reasons. It is becoming increasingly difficult for any honest patriot to continue in that organisation due to machinations of self-seekers and flatterers who have immensely swelled its ranks after it has come to power.

It appears in the next five years, this process of pushing out of old guard of the Congress who are, somehow, maintaining the unity of the organisation all these difficult years after Independence, will more or less be completed by the power-monger and self-seeking element which is increasing by leaps and bounds and which is

out to gain ascendency in the organisation. That will be the time for the disintegration of the organisation and rise of some other political pary or parties to fill the vacuum. May be the Nation may have to pass through some major national catasrophe in the interval by way of shock cure to provide necessary corrective to the demoralising tendencies of the people and to give right direction to their misdirected energies.

NOTE

LET TRUTH BE TOLD

ONE Block Development officer, who has to suffer for his sincerity and honesty in the rural development programme writes to us :—

"I am really much surprised to read your note "Inside view of Rural Development programme" in the January, 1957 issue of "Rural India" and to see how my feelings on the subject have found their way to and expression from you. From these very thoughts I am suffering the most for the last three years since my taking over as a Block Development Officer, and in my endeavours do things really correctly and economically, I have suffered serious clashes with authorities and numerous transfers and other pecuniary and physical troubles. Whereas the transfers pain the poor and innocent rural masses they also afford opportunity for the corrupt and inefficient officials in all ranks to feel pleased to find their way cleared.

"I still hold that if we work with sincere motives, we may achieve much. I discuss my views with my colleagues, some of whom do realize that they are not doing right things. But they also have to exist and therefore they follow the course adopted by the corrupt ones leading them close to the authorities and winning their appreciations instead of going to the poor and rural people for their salvation".

If truth is allowed to have its way in free India, most of our troubles and weaknesses will disappear from public life. The superstructure of our freedom must of necessity rest on the basis of freedom of conscience to every citizen including government officials, if it is to be enduring. Suppression of truth in government services–miscalled official discipline–is at the root of all evils and corruption from which our administration suffers, making government service a breeding ground of of hypocricy and dishonesty. Such a state of affairs must be remedied by our leaders in administration, if the nation is to be saved from ultimate disaster. Where is the meaning of repeating Gandhiji's name and applying his principles of 'Truth and Non-Violence' in international affairs for lasting and enduring peace, if truth is victimised in public and administrative services of our own Country.

Things are not being done in the right way and with a right spirit in our Community Projects and National Extension Blocks and there is plenty of hypocricy and corruption in our rural development programme is what the letter purports to convey. We have nodoubt, most other officials connected with these administrations will echo the same feelings if they get over their weakness of 'Existence' which has demoralised them. National duty demands that they should rise above this weakness of flesh and learn to suffer to save their conscience. Killing of conscience for the sake of physical existence is both unwise and immoral and does not pay in the end.

STRAIGHT THINKING IN ECONOMICS

By : **G. JAYACHANDRAN.**

STRAIGHT thinking is a strenuous job and most of us, I must confess, do not have orderly mental habits and mental discipline demanded by habitual straight thinking on all issues. Straight thinkers on economic subjects are rare specimen, not because economics is inherently harder or more complex than any other subject, but simply because economics is so mixed up with our everyday lives that without realising it we have accumulated a great mass of opinions, ideas, hearsay and half-truths that subtly dominate our minds with the net result that when confronted with complex issues calling for solution on a practical basis many of us grope in darkness for a fair answer. Indeed one of the most frustrating aspect of this subject, which is so vastly influenced by the individual character of men and social solidarity of the community exposed in different manifestoes of human experience, is its susceptibility to the disagreeing nature of different theories and modes, mostly built on artificial grounds and arbitrary assumptions and thus mostly void of naked truth.

The economists have lavishly demonstrated the possibility to develop a system of economics complete and consistent within its own limits which breaks down when an attempt is made to apply it to real life; the assumptions made are too far removed from human experience. The multifarious dimensions of a single issue make us believe every view, when each bolsters his argument with lots of facts and innuendoes against the opposition. The pros and cons disappear in mist and we are left with no gist of the problem until we ourselves analyse it in our own perspective but consistent with retrospective adherence to the logic of the theme.

Economists talk about the objective, goal, end and what not of economics but hardly they put their ideas to an assembling current of a coherent whole. The subject has not yet reached the stage of which a number of rules of practical conduct can be laid down. Economics is conceived with the way the entire economy operates, not with how to run a better grocery, bank or how to maximise the profits of a single firm. Economic laws do not work like physical laws. The law of gravitation is accurate, precise and will operate in a most certain way over an infinite range of period. But how about the law of supply and demand? Shall it work in the same way throughout whatever may be the pattern of the economy, the economic power of the community or the behaviour of the economic man? The answer is one emphatic 'NO'. The most uncertain nature of the economic laws facilitates every economist to 'take the laws in his own hands' which permits him to twist them in serving his own purpose with all ease and grace. Nevertheless, in trying to understand how the economy operates, the economist likes other scientists, must have recourse to a simplifying analytical framework, in order to observe and understand the infinitely complex real world. To this end, he uses simplified models or theories as an analytical tool. Like other scientists, he has to be constantly on guard against confused thinking and the resultant fallacies that adumbrate any attempt in the way of grasping complex phenomena. Complexity is not the sole criterion for attempting any analytical treatment of a question; rather lucidity and profoundity may be the goal of such an analysis in order to maim the fallcious syllogistic reasoning and to ferret out crooked thinking. The role of economist as an adviser on public policy is crucial, but at the same time critical. He must be terribly careful to

specify clearly the goals or objectives being sought if he is to prescribe useful steps to make the system work better.

Another frustrating aspect of economics is that so often different people make flatly contradictory statements about the facts. When one presents his argument he invariably heaps on us 'facts' which fit well with his argument. When is a 'Fact a fact'? In our country, for example, the planners claim the logic of nationalisation to be in their favour while the free enterprise contend it to be resting with them. Both have 'facts' to present to us. When people want us to believe something they tell us 'It is a fact'. This is an old trick of argument. Straight thinking in economics requires to peep behind and check up on the 'facts' presented to us with all mental alertness and vivacity harnessed with logical consistency.

Generalisations in arriving at conclusions on economic issues largely affect the validity of the conclusions so reached.

There is probably no commoner fallacy than that of generalising unthinkingly from seemingly small and unrepresentative samples. Of course, the commonest way of extending our knowledge is by learning continually from what we see and do. Evidently, we inevitably build up tentative and transient generalisations about the world from our everyday experience. Generalisations thus made out of limited experience are dangerous in their own ways. A representative or typical experience is rarely achieved by individual and singular attempts. The only safe generalisations are established by careful systematic observation of a large number of cases. The wise observer of economic scene is the one who sees the grays in the proper shadings—not the one who sees everything as black or white, true or false. Blending of facts which are true only to reach a definite and valid statement cements constructively the soundness of the conclusions deduced.

Compare these two statements heatedly exchanged between two parties during our past General Elections;

'We have again demonstrated our ability to resolve our differences in our traditional democratic fashion.'

"Vital issues have again been settled by blind mob rule, slavishly following the mistakes of the past."

Do we not get a different 'impression from the coloured words in each? The use of coloured words in adding strength to a poorly reasoned out argument may sway the recipients to the side of the arguer. We must sensitize ourselves to such words and guard against fallacious reasoning by insinuation.

The most apparent fact about economic reality is its complexity, diversity and perplexity. Economic problems are complex when they are composed by segments of contradictory views urging reconciliation through compromising contrary purposes. Economic problems become diverse in origin and growth when they are set in resignation to the purposes out of which they had grown. A reconciliation of the diverse elements that constitute the problem is no more feasible when they are not withstanding the tests to which the problem is committed. Finally, perplexity is the result of fallacious analoguous reasoning and paradoxical conclusions drawn out of tentative and hasty generalisations. In economics, as in all other sciences, the widely acknowledged approach is to devise simplified models of various parts of the economic system and of system as a whole. These models, one must admit, make no pretence of being accurate descriptions of any detailed part of the economic system, because if they were all correct, they would defeat their own purpose by getting back to all the detail. Instead, they are chiefly intended

as highly simplified abstractions of the main elements of the reality to which they are related.

Straight thinking, especially in economics, involves flexible conclusions as consistent with the changing realities of the economic behaviour of men. We can claim to be correct only when we are clear. Clarity and logical consistency in an investigation of indefinite sets of phenomena, characterised by violently fluctuating conditions which are exempt from any effective control, naturally presupposes approximations and never certainties. In the context of changing economic realities, we can be precise and definite for a while not forever.

An accurate thinking based on complete logicality and comprehensive data may be obnoxious to a process of economic reasoning or an idealisation of economic principle; but a proposal for straight thinking reinforced by a consistent logicality and available data is clearly an actualisation of economic thinking and surely is not an idea empty of experience.

To be really precise, we must change with changes in economic reality. Naturally precision in economic thinking is a moving and dynamic concept. The implicit quality of a straight thinking in economics is its dynamism in approach and treatment of the content of the problem, and aversion to static treatment. It has to take cognizance of the ever-changing realities of the economic life.

The economic man benefits society the most when he strives to benefit himself. Rationalism goes hand in hand with individualism in the economic context. While pursuing his self-interest, the individual must act with *efficiency*, efficiency meaning absence of waste. This absence can be accompanied only if action is rational or 'scientific'. Such scienticism or rationalism will have a more free play in a competitive system. The very fact that this faith in free economy contains rationalism as a valuable commitment, makes it necessary for its advocates to establish 'scientifically' or 'rationally' that such a society is possible. That social structure in which the outcome for society at large is a best one, must necessarily follow up a pattern of free economy.

A straight thinking in economics is not a wishful thinking but a free and clear thinking. At the same time the index of straight thinking should not be interpreted to mean interference of the pressure of practical problems with the true development of the subject considered, as a search after truth. If the disinterested quest after pure truth is hampered at every turn by considerations of practical expediency, the object of straight thinking will end in frustration. A portion of the field of inquiry may be simple in structure, a rapid advance in knowledge may be secured, and definite results obtained. It is the sacred job of staight thinking to curb the temptation to transfer these results to the solution of problems where the conditions are more complex, in order to shadow out the disturbing factors present, which may overbear the legitimacy of the conclusions. To be straight thinkers, we should not breed in ourselves a nostalgia for any particular commitment nor should we have on undue bias or regard for, and be in favour of doctrinaire approch.

An intelligent friend of mine who had carefully gone through this manuscript yelled to me: "Theory is all right for college professors and you academic squibblers (I am not sure whether he said scribblers or squibblers) but not for me. I am a practical guy. Give me the facts and they will speak for themselves". I answered him: "Try to straighten out your feelings, my boy, about which, if any, of the objectives you want to accept for any economic system. And whatever your objectives are, keep using them as standards to evaluate how well you like the way the economic system, in question, works."

REVIEW OF THE RESOURCES FOR THE SECOND PLAN.

By : **Prof. S. V. RAMAYYA.**

IN this article an attempt has been made to reassess the financial resources in the light of the progress made during the 9 or 10 months of the first year of the second Plan and to evaluate the possibility of fulfilling the targets and resources aimed at.

In the statement of the financial resources for the Second plan an amount of Rs. 800 crores is to be raised by way of taxation of which about Rs. 350 crores would be the increase in revenue following the rise in national income and Rs. 450 crores by way of additional taxation. The plan has left a gap of Rs. 400 crores to be covered later on and in view of the revised notions of reducing the amount of deficit financing this gap of Rs. 400 crores plus a few more hundred crores that may arise may have to be filled up by taxation.

But recently the planning Commission seems to have increased the total outlay from Rs. 4800 crores to about Rs. 5300 crores in view of the increase in expenditure expected due to Suez crisis and of adding some more items of expenditure to development plans. As the developmental expenditure increases we should expect certain increases in non-developmental expenditures as well. The plan even at Rs. 4800 has been claimed to be a bold adventure and the results of aiming high have been acclaimed as conducive to higher efforts and greater exertions. We have to increase the pace of our development, it is said, unless we aim high, we would not be able to make any contribution to the increase in living standards. We submit that eventhough a plan should be ambitious and bold, it should not be unrealistic and our experience during the first 9 to 10 months of the working of the plan has convinced us of the impropriety of aiming so high when our resources are so limited.

Prof. Kaldor has made some very radical proposals with regard to direct taxation and raising of revenues. He wanted reformulation of the concept of 'income' for purposes of income tax in such manner as to widen its scope. Here there would be no space to discuss exhaustively the scope of the proposals, suffice it to say that the 'reformulation' of the concept of income would add considerably to the existing effective rates of taxation. He proposed four additional direct taxes viz., a capital gains tax, an annual tax on wealth, a personal expenditure tax and a general gifts tax. He wants a considerable reduction in the existing rates of direct taxation on personal incomes in view of the above taxes suggested. He would however incorporate capital gains in taxable income and subject it to the overall income-tax rates. An annual tax on wealth, as in Japan and a few other countries, is proposed. It has the advantage of providing a good check on evasion and concealment of income, as an examination of a man's property ownership is likely to lead to the discovery of his concealed income.

We are all aware how the Taxation Enquiry Commission itself has suggested such a tax on total wealth. In addition to gifts tax and as an offset to the proposed reduction in income tax and super tax Prof. Kaldor suggests a personal expenditure tax. We wonder whether such a tax is feasible and he wanted tightening of the tax collecting administration to prevent evasion. All these taxes are claimed to contribute annually about Rs. 120 to Rs. 130 crores. The problem that strikes us immediately is, will it be possible for the government to introduce such radical

changes and reforms in the context of our economy? Will these taxes yield so many crores to the public exchequer as have been claimed by Prof. Kaldor?

The Planning Commission observes that there is a single pool of resources to draw both for the public and private sectors. But if such large resources are to be had to the public sector, will the private sector be able to invest Rs. 2400 crores assigned to it by the second plan? We are unable to agree that Prof. Kaldor's proposals can be implemented and also about the expected revenues. We hope the Planning Commission would bestow thought on the practicability of these proposals.

Our Finance Minister has, in order to raise more revenues, levied some additional taxes. An excise duty on cloth was raised with a view to checking scarcity and windfall profits for the producers or traders. But it has led to a certain extent to a rise in prices of cloth. Some direct taxes were also levied–taxes on capital gains–increases in the rates of supertax payable by companies which declare dividends in excess of 6 percent depreciation and other reserves of the companies. No doubt some of these taxes are laudable. "Once we accept the policy of discouraging the distribution of profits, it is essential to ensure that these profits are put to use which promote industrial development in accordance with the plan." In the case of companies, depreciation allowances and development rebates due, will be added back in the computation of the income unless a certain amount is deposited with the Government or the Reserve Bank of India. The deposit will carry interest and will be refundable wholly or in part on request by the company, if the government are satisfied that the amount refunded will be used by the company in the business for purposes approved by the government in the furtherance of the objectives of the plan.

Higher customs duties are proposed on some selected articles like wines, spirits, watches, clocks, coal tar, dyes, artificial silk. Excise duties are levied on articles like indigenous art silk yarn, staple fibre yarn and luxury motor cars.

All these taxes are not new. Most of them have been suggested by the Taxation Enquiry Commission for later implementation. The TEC viewed 'If owing to the accelerated tempo of development or otherwise, we enter an era of continuously rising prices and profits and of capital values, capital gains may become an eminently suitable subject for taxation and should be brought within the tax net. There is no doubt that they do represent an addition to income and therefore to the tax payers ability to pay. Moreover, they constitute one of the factors making for inequalities of wealth, especially in a developing economy with its increasing measure of industrialisation and urbanisation."

While the Commission did not mention an excise duty on luxury motor cars, it recommended that an appropriate expert enquiry should be held at an early date.

The Finance Minister estimates that from all these taxes we can expect about Rs. 16 crores a year. The capital gains tax is expected to yield Rs. 5 crores to Rs. 8 crores during 1957–58. The tax would be imposed on capital gains realised and not on capital gains accrued. Some other changes are to be introduced to relieve the burden on the middle classes.

All these taxes are not going to yield so much revenues as to fill the target estimate of raising an additional taxation of at least Rs. 150 crores every year to meet expected greater deficits.

But to raise the needed resources for the plan, the States so far do not seem to have taken any steps. They are more interested in getting a greater share of the

pool of revenues from the Centre through the Finance Commission and rely on this source for meeting their developmental expenditure. If this is so how can the Planning Commission fondly expect the required additional revenues from taxation. It is incumbent on the part of the Government of India to make the States realise the contribution they have to make for raising resources rather than depend on Centre's contribution. We believe from the present trends that the States are not at all eager to levy additional taxation.

For raising resources there seems to have been some over-estimate about the possibility of getting them through loans. No doubt in 1956-57 the Central and State loans have been over-Subscribed (about Rs. 160 crores to the Central loan and about Rs. 60 crores to the State loans). The Commission seems to depend more on these loans and small savings. But can these loans and small savings make up the lee-way substantially? They may contribute 200 crores of rupees more than what is estimated in the plan (Rs. 700 crores from loans plus Rs. 500 crores from the small savings) and thus may total Rs. 1400 crores. But how is the large gap that is expected in taxation would be filled in? This is a matter that deserves the attention of the Planning Commission.

Our foreign exchange reserves seem to fall short by another Rs. 200 to Rs. 400 crores due to Suez crisis and rise in external price. That is, we estimate the gap in the foreign exchange resources to be of the order of Rs. 1200 crores and not merely Rs. 800 crores. The efforts made by our Special Officer to raise foreign loans in Western Europe have not been fructified due to the very high rates of interest. We now learn that the Government want to import 8 million tons of food grains during the Second Plan period to prevent any rise in the prices of food grains so as not to upset the developmental programmes internally. No doubt due to our trade agreements and help from the USA, China and Burma, these imports may not impose the same pressure on our limited foreign exchange reserves but we may have to find foreign exchange for at least half the amount (4 million tons of food grains). Three lakh tons of rice were brought from Burma in 1956 at £ 34 per ton and it is proposed to import during the current year 5 lakhs tons of rice at £ 32 per ton. Hence our foreign exchange requirements may be of the order of Rs. 1200 crores and not merely Rs. 800 crores. How are we going to meet the situation?

The help from the world bank for specific projects, the Russian credit to the tune of Rs. 60 crores, the British Investment, the American aid may help us to a certain extent. The cost of our imports have been greatly increased not only because of the long route our goods have to take via Cape of Good Hope but because of the delay in arrivals.

Recently there seems to have been optimism that foreign aid may be coming substantially but we have already shown how our foreign exchange reserves may fall short not by Rs. 800 crores but by about Rs. 1000 crores if not Rs. 1200 crores. The Colombo plan in its review for the year 1955-56 has called for more external aid for the area, "External capital assistance in addition to supplementing the countries' own resources has a value of generating further domestic investment. There is an important place for private external investment as a means of obtaining capital in flow particulary because of the technical knowledge it brings with it and its flexibility". We find the World Bank is also pleading for fuller scope for private enterprise in general and foreign private enterprise in particular. American private capital, we learn, is not willing to invest in our country unless the profits offered and allowed

are higher. In the context of the above situation, how do we feel optimistic to fulfil the foreign exchange gap?

We have already drawn heavily on our sterling reserves for our imports. The foreign exchange reserves held by the Reserve bank since the end of March 1956, have declined from Rs. 746 crores to Rs. 543 crores, a fall of about Rs. 200 crores. On December 21, 1956 the sterling balance stood at Rs. 536 crores. It would be necessary not only to economise our imports and to increase our exports but also to take active steps in addition to secure the necessary quantum of supplementing resources from abroad. The actual performance of the country's Export trade in the first 9 months of 1956 has not been reassuring. The monthly average of our imports in the first nine months of 1956 was nearly Rs. 66 crores as against the monthly averages of Rs. 54 crores, in the same period in 1955. There is realisation that there should be largest diversion of goods in our foreign trade.

During the last 9 months the country has earned foreign exchange of only Rs. 439 crores as against Rs. 457 crores earned during the corresponding period of the last year. This appeared to be partly due to a fall in the external price level of some of commodities that figured in the export trade. The index of declared values for the half year ending June 1956 stood at 91 as compared to 94 for the corresponding period in 1955. We may have to increase the exports of leather, jute goods, handloom cloth, oils and oilseeds, mica and manganese. But these exports should conform to certain qualitative standards. There are a number of items which we are exporting in raw form and which if we reprocess, may yield substantial prices in foreign countries and hence increase our foreign exchange.

It is claimed that cloth production by Indian textile mills in 1956 reached the peak figure of 5277 million yards. This indicates an increase of 163 million yards over the production in 1955. As an incentive to the mills to step up production the Union Government promised rebate of six pies per square yard. The mills now seem to be taking advantage of this rebate and producing more cloth. But one important fact should not be overlooked. The internal price-level for cloth has risen and the consumers are actually bearing the burden of new excise duties whatever might have been the good intentions of our Finance Minister. On the export side we sent during the 9 months of 1950 mill cloth of 538 million yards valued at Rs. 41½ crores whereas in 1955 in the corresponding period we sent 581 million yards cloth valued at 44½ crores. In handloom sector we find better result.

Handloom cloth of 46 million yards valued at Rs. 6.69 crores is exported in the first 9 months of 1956 compared to that of 45 million yards valued at Rs. 6.37 crores exported in the same period of 1955.

The State Trading Corporation is also striving to increase exports to countries with controlled economies, so that it might be possible to import from them steel, cement and industrial equipment without restraining our sterling reserves. Some of our important ores, shoes, tobacco and wollen piece goods handicrafts which are in demand in Soviet Union can be sent through our State Trading Corporation. It is able to effect purchases at reasonably low prices thus effecting subtantial savings in our foreign exchange expenditure. Great scope exists for the enlargement of our exports to south East and West as inspite of some of our achievements in particular direction there should not be any complacency about our export position.

But equally important is to make the internal price—level stable because if our internal prices rise our export promotion drive may be put in jeopardy. There is

another problem that has to be reconciled. We have to see how best we can improve our exports without creating scarcities for our own people internally. For instance, the world demand for oils and oil cakes is great. But the home demand is equally great. Hence we are not able to export a big proportion of these. This shows the necessity for internal production of these goods is to be raised substantially.

We have to take one more precaution. Our export prices for mica, manganese, jute must be reasonable otherwise the foreign countries may be compelled to find out substitutes for the above.

However if the plan has to be implemented we would have to strain a bit and push up the exports as the implementation of the plan would necessarily involve a fair amount of imports also. Figures of imports available showed that the country imported in 1954 goods worth Rs. 618 crores, in 1955 Rs. 648 crores and in 1956 upto November Rs. 736. The balance of trade had thus been adverse to the extent of Rs. 56 crores in 1954, Rs. 48 crores in 1955 and Rs. 189 crores during January to November 1956. The Government in order to conserve the foreign exchange resources have imposed drastic cuts in the import quotas of over 500 items and denied licenses for a number of non-essential items which high lighted the import policy for the first half of 1957 (January to June). The major cuts in imports have been made over a range of items having strong indigenous industry angle.

This account gives us an idea as to how difficult it is to fill the gap of our foreign exchange resources. We may enter into barter arrangement with some countries yet it is doubtful whether our foreign exchange position could be improved.

The above, discussion leads us to the only conclusion that the plan is too ambitious and that we do not possesa the needed resources to finance it. And such an unrealistic ambition may lead to frustration. It is desirable for the Planning Commission and the Government to pay more attention to realism.

Of late, there has been less talk of deficit financing, thanks to the continuous rise in prices of food grains and a number of commodities and this is a welcome feature. Any impartial and unbiased judgement leads us to the impracticability of raising the resources. In the first plan we aimed at spending Rs. 2356 crores in the public sector, but actually we spent less than Rs. 2,000 crores due to shortage of resources and other reasons. If the Planning Commission aims at spending Rs. 5300 crores or Rs. 5400 crores how are they going to raise the resources in the light of the above trends in our economy. And the record of some of our public enterprises like the Indian Airlines Corporation and the Nationalised Transport is discouraging. Even though we want our Planning to be democratic, we are creating a mighty bureaucracy which may be a great stumbling block for the realisation of the goals laid. Even in countries like U. S. S. R., the techniques of Planning have been changed. Greater decentralisation has been aimed. The Central Committee of the Soviet Communist Party's report on planning shows that bureaucracy and excessive central control remain in the Soviet Economy. It stressed the need to increase the initiative and responsibility of "men on the spot".

If the Planning Commission and the Government are realistic enough they should not talk of austerity measures and tightening of belts to the masses as they are already having poor standards. They should themselves set an example by observing austerity and dedicating themselves to the cause of planning by observing economy

and initiative in reducing unnecessary expenditure. In a democratic planning, success depends on the co-operation of the people which in turn depends on the sacrifices imposed by the leaders on themselves.

Space does not permit me to analyse the lopsidedness of our economy and the over-optimism of the Planning Commission in under-stressing the development of agricultural output in the Second Plan on the basis of results obtained in the First Five-Year Plan. As Vera Anstey observes "Much of the agricultural success must however be attributed to a series of good monsoons. This has been officially recognised. But it seems it has engineered over-optimism in some quarters.

The mistake of assuming that substantial food imports will seldom be required in the future (thus avoiding the deplorable misuse of scarce foreign exchange in past years) has been recently exemplified by a resumption of crop shortages, entailing considerable imports, so that agreements have been made with several countries for the supply of rice and wheat". This mistake is being rectified by increasing the target of food grains to about 35 percent. We hope in a similar way the Planning Commission would revise its over-ambitious expenditure in various sectors apparently yielding less fruitful results. There is apprehension among the public that with the increase of governmental expenditure waste and extravagance may rise quickly. It is needless to remind ourselves that to be a success, any plan must be realistic and practicable.

COTTAGE AND SMALL SCALE INDUSTRIES IN INDIA.

By : AMRIT KATYAL

GROWTH of unemployment and paucity of capital have forced our planners to focus their attention on Cottage and Small Scale Industries. But in the age of big machine, it seems that the days of cottage industry are absolutely over. It is a very hasty, and to some extent, a wrong conclusion. In fact, such industries can play a vital role in making NEW India.

The importance of cottage industries (and small scale ones) is not only realised in backward economies, but also in highly industrialised countries like U. K., U.S.A., Germany and Japan. For example, according to U.S.A. statistics small business consists of 90% of the total business establishments and employ 50% of the country's working population. The structure of Japanese Economy is completely based on cottage and small scale industries.

The main factors which have attached a great significance to such industries in India and other Asiatic under-developed countries are the wide-spread unemployment, unutilised resources and paucity of capital.

Under-employment and Unemployment.

It is a well known fact that inspite of decreasing unemployment, in a planned economy, unemployment is increasing at a rapid speed, especially in urban areas. According to the register of Employment Exchanges the urban unemployment stands at 8 lakhs. Though it is not a reliable and fairly representatives statistics, as there is voluntary entry, yet it throws a light on the vastness of the problem.

The immensity of the problem becomes greater when we include rural unemployment and under-employment. According to official Labour (Agr.) Enquiry 16% are

chronically unemployed and the rest who are employed remain without work for 82 days in a year. No statistics are available for female workers in the rural areas. Under-employment in the rural areas is due to the seasonal character of agricultural industry. Besides, many of the large scale industries, such as sugar, cotton ginning and pressing, are also seasonal.

With all this we must include two million yearly more persons into the market for employment.

From the above statistical figures we can safely conclude that unemployment problem is really the Enemy No. 1 of our country. Now the question arises that, can these people be absorbed through factory production activities or by large scale industries or not. Our answer, based on statistical analysis, will definitely be in the negative. The following statistics gives the answer clearly :--

Year.	Factory Employment. (in lakhs)	Index No. of Industrial Production. (Base 1946-100)
1950	25.0	105
1951	25.4	117
1952	25.6	129
1953	25.3	135
1954	25.7	146

The above table indicates that employment opportunities do not expand at the same rate as industrial production. Since 1950, production has increased but employment is more or less stagnant. It is due to the fact that such industries are capital intensive and they are not able to absorb a large number of unemployed army.

But this problem of unemployment and under-employment can be best technically tackled by encouraging the development of cottage and small scale industries.

Paucity of Capital.

Lack of capital is the second important factor which makes a necessity for the development of cottage and small scale industries in our present set up of economy. It is a well known fact that India is very poor in case of capital and technical know-how. But without these requisites, large scale industries cannot be run.

Besides, the amount of investment required to give employment to one person in a modern type of industry like iron and steel or sugar, may well be over Rs. 10,000/-. The following statement shows modern units in the public sector and the employment in those industries :—

	Capital Investment (in million Rs.)	No. of Employees (in 000)
1. Sindri Fertilizer Factory	230	6.2
2. Chittaranjan Locomotive Factory	150	4.2

This information shows that large scale industries require more capital to absorb a few people. But cottage and small scale industries require less capital and little technical know how. This is the reason that Gandhiji advocated such industries which are labour-intensive and not capital-intensive.

Third consideration is that such industries provide, more or less equal, distribution of income in the society. Thus it fulfills our, one of the main, objectives of the second five year plan. Such industries can secure more distribution of wealth and thus contribute to social and economic stability of the country. As against this, factory production results in enriching only a few and thus causes bitter hostility and struggle between capital and labour. This fact has been proved to be true as large scale industries or industrial revolutions have given chance to the labourers to form trade unions, thus creating a Marxian-gulf between capitalists and workers.

Fourth important factor which ensures a vital role of cottage and small scale indus-

tries in our economy is that it can change economic structure of our country, i.e., it can divert our spare or loaded agricultural resources towards industrialization in the country. Our agricultural sector is over-crowded and there is much economic waste in this sector. An immediate solution which can be advocated is therefore, development of cottage and small scale industries.

Lastly, we should not ignore the social aspect of the problem. As we are pledged to a Socialistic Pattern of Society, we must try to develop such industries as can mitigate the differences between rural and urban folks. We are aware of the fact that urban people are living much better and enjoying more prosperous life than the poor illiterate villagers. Such industries can raise the living standards of the rural folk upward and will place them on par with the urban people.

Government Attitude.

Since the advent of Independence the attitude of Government towards such industries has undergone a welcome change. Before the partition of the country cottage industries were completely destroyed in the interests of British manufactures. But the National Government after the partition could not tolerate such a policy. They, therefore, have been and are still trying their best to develop such industries. Since 1948, following concrete steps have already been taken for their development.

The first helpful policy was originally announced in 1948 in the Industrial Policy Statement of the Government of India. In this statement a vital role was assigned to such industries.

In the second place, several boards or organisations have been set up in the last eight years, for example, Cottage Industries Board, established in 1948, All India Hadicrafts Board (1952), All India Handloom Board, Khadi and Village Industries Board (1953), Board for Small Scale Industries (1954) and numerous others which have been established in various States under the jurisdiction of the State Governments. These boards have been equipped with finance and technical guidance imparted by the Central and State Governments.

Thirdly, Government levies a cess of one pie per yard on mill made cloth to assist cottage industries. The cess yields about Rs. six crores annually. On the other hand, subsidy of three annas in a rupee on khadi cloth is given for assisting handloom industry. The second measure to promote the largest handloom industry is to reserve certain lines of production, for instance, in case of "Saris" mills can produce upto 60% of their previous production.

Fourthly, finance being the life-blood of industry has been made available for them. State Finance Corporations have been set up in certain States. Besides, by a recent Amendment, Reserve Bank Act funds will be provided to State Co-operative Banks and State Finance Corporations for the production and marketing of such industries.

Team of International Experts

In 1953, a team of international experts was invited to go into the matter which suggested various remedies for developing cottage and small scale industries. Their main recommendations were as follows:—

(a) Establishment of four Regional Institutes of Technology for small scale industries.

(b) Establishment of a small Industries Corporation.

(c) Establishment of a Marketing Service Organisation.

(d) Several multi-purpose institutes which would assist such industries in improving production and management.

The first three recommendations have already been accepted. Regional Institutes of Technology have been set up at Madurai, Bombay, Calcutta and Faridabad. Small Industries Corporation was also set up in 1955. Thirdly a research institute will be set up very soon.

Five Year Plans.

During the first plan period Rs. 27 crores (15 crores Central and 12 crores 'States') were allocated for such industries. *But no progress was made in the development of such industries as the Government had no exact programme.*

During the second plan period, an allocation of Rs. 200 crores has been made. The broad structure of industrial policy enunciated in the Second plan follows the lines of 1948 Industrial Policy Statement. According to Planning Commission, the elements may form the part of a common production programme :—

(i) Reservation of sphere of production.

(ii) Non-expansion of the capacity of large scale industries which compete with cottage and small scale industries.

(iii) Imposition of a cess on large scale competing industries.

(iv) Arrangements for the supply of finance and raw-materials.

(v) Co-ordination of research, training etc.

The allocation of Rs. 200 crores is as follows :—

(In Crore Rs.)	First Plan (1951-56)	Second Plan 56-61
1. Handloom	11.4	66.5
2. Khadi	8.4)	48.0
3. Village Industries	4.0)	55.0
4. Small Scale -do-	5.3	9.0
5. Handicrafts	1.0	9.0
6. Silk and Sericulture	1.3	5.0
7. Coir	Not stated	1.0
8. General Schemes (Adm. etc.)	-do-	15.0
Total	31.4	200.0

Note: Annual Number 1956 Economic Weekly.

Practical Difficulties

Inspite of the very valuable role which the cottage and small scale industries can play in our economy, their present position is far from satisfactory. Many of them which were once very prosperous are dead today, others are languishing while still others which are alive are just keeping their existence. Main difficulties which the cottage and small scale industries are facing are mentioned below :—

1. Lack of marketing facilities due to machine made goods.
2. Lack of finance.
3. Inefficient human factor.
4. Irregular and insufficient supply of raw materials.
5. Competition from imported articles.
6. Lack of modern techniques.

Suggestions for Improvement

The main difficulty which retards development of these industries is lack of organised marketing system. In this connection Karve Committee which was appointed in 1955 by the Government of India to make a plan for the development of cottage and small scale industries, suggests that an organised body or board should be set up. The board should have a large number of branches spread all over India. Branches should be set up in rural areas and not in urban areas, as this practice prevails at present. The board's main task is to contact private and Government concerns to get the orders.

About the rebate system and subsidy on sales, Karve Committee's view is that though it offers a direct incentive to the individual producer a fixed rebate is not likely to be effective in emergencies or in case of seasonal slackening of demand or a temporary fall in prices.

More successful than the rebate in getting over this problem has been the system adopted recently by the Handloom Co-

operatives of buying off the hands of member weavers all their production continuously. If the co-operative is in a position to assure its members that it will purchase their total production at a steady price, then the producers need not fear temporary recessions. So this system can assure steady market for them.

The next important problem in the age of big machine is that the cost of production of cottage and small scale industrial goods is comparatively very high and this results in higher price. Cost of production can only be reduced when the supply of raw materials and finance are made cheaper than now-a-days. In case of finance Government can do much. Now the State Bank of India has already been nationalised, this function can be easily performed by the same. Secondly, Co-operative Credit Societies are the best agencies for this purpose. For small scale industries, State Finance Corporations should be set up; if it cannot be done due to paucity of funds then Regional Financial Corporations should be set up. Setting up of Regional Finance Corporations will be more suitable in our present set up of economy as this method ensures development of such industries in the most backward areas.

Rural electrification is urgently needed. The success of small scale industries in Japan and Switzerland is mostly due to provision of cheap electricity. Karve Committee also stresses emphasis on cheap power in rural and semi-urban areas.

Co-ordination with large scale industries is very essential. Cottage Industries should be complimentary to the large scale units. In this way semi-finished goods can be purchased by the big urban industrial units in quantity.

Lastly, research institutions must be organised. Besides standard of quality will promote such industries. Special industrial schools suitable to cottage and small scale works should be started in rural and semi-urban areas.

An Over All Appraisal

From the above analysis we can safely conclude and support Gandhian slogan that 'Salvation of India lies in Cottages". "India is a poor man's country, a country of rural folks seethed in eternal poverty and misery......the real remedy today lies in the development of cottage and small scale industries." The various suggestions made above can help us in this matter. One thing must be noted that such suggestions can only succeed if the Government gives whole-hearted co-operation. The remedy of development of cottage industries lies in the following three ways :—

(i) Adoption of principal of co-operation in the field of small scale and cottage industries.

(ii) Active policy of State assistance.

(iii) And encouraging the Swadeshi spirit among the rural and urban masses.

Underneath these three principles lies the prosperity of India. We have the example of Japan, Switzerland and Sweden. They all followed these principles and achieved their national prosperity.

PROGRESS OF CO-OPERATIVE MOVEMENT IN INDIA

(*Continued from January 1957 issue*)

There were 339 Mill-hands Societies in 1953-54 out of which 286 were in Bombay State. The Societies commanded membership of 250585 millhands, and their owned funds where Rs. 380.58 lakh. The overdues are normally 2 to 3% of the total outstandings, but they rose to 7.63% in 1953-54.

Land Mortgage Banks

Land Mortgage Banks are actually working in only 7 States viz., Madras, Andhra, Mysore, Bombay, Madhya Pradesh, Orissa and Saurastra. Thus for large parts of the country, arrangements for long-term credit were non-existent. The following table shows the progress made by Central and primary land mortgage banks.

Rs in lakhs

Particulars	Primary		Central	
	1949-50	1953-54	1949-50	1953-54.
1	2		3	
No. of Banks	283	304	5	10
Membership	186330	165186	8871	49753
Owned funds	60.02	96.25	55.68	103.48
Debentures	8.76	7.81	581.75	1145.04
Working capital	586 09	955.26	686.94	1392.66
Current advances	101.11	140.56	101.08	192.40
Out standing	534.37	878.86	511.72	1035.16
% of overdues	—	1.8	—	3

Of the total numbers of primary Land Mortgage Banks 211 are in the three States of Andhra, Madras and Mysore, commanding 79% of membership, 82% of working capital and 78% of fresh loans.

Marketing Societies

The Number of State Marketing Societies was at 76 at the end of 1953-54. Their membership however declined from 9102 individual and 4628 Societies in 52-53 to 2870 individual 3679 Societies resp. in 1953-54. The Loans issued by them to their members amounted to Rs. 267.13 lakh in 1953-54 as against Rs. 317.66 lakh in the preceding year. While the value of goods sold declined from Rs. 14.58 Cr. in 1951-52 to Rs. 4.36 Cr. and Rs. 2.86 resp. in the following two years.

The number of Marketing Unions and Federations and their membership increased from 2054 and 1594844 in 1952-53 to 2125 and 1651199 in 1953-54. The loans issued increased from Rs. 376.26 lakh in 1952-53 to Rs. 430.61 lakh in 1953-54. The sales declined from Rs. 33.17 Cr. to 27.42 Cr. in 1953-54. In this category the Cane Unions of Uttar Pradesh were preponderant, their number being 1973, membership 1624605 nd sales Rs. 23.18 Cr.

The number of Primary Marketing Socities and their membership increased from 8816 and 914899 in 1952-53 to 9240 and 928122 in 1953-54. However their paid up capital loans issued and sales declined from Rs. 10.95 Cr. 8.67Cr. and 26.0 Cr. in 1952-53 to 1.92 Cr. 7.43 Cr. and Rs. 21.92 Cr. in 1953-54. Out of the total number of 9240 societies 7148 or 78% were in Bihar but the proportion of their membership and loans issued to the total loans was as low as 26% and 5.8% respectively.

Consumers Stores

The number of Primary Consumers Stores declined from 9579 in 1951-52 to 8257 in 1953-54. The membership and sales also declined from 1839942 to 1793786 and from Rs. 8374.97 lakh to...... 3204.19 lakh resp. during these two years. Similarly number of Whole Sale Consumers Societies was reduced from 95 in 1951-52 to 86 in 1953-54. They also received setback in respect of membership share capital and sales.

The Consumer movement was relatively well developed only in Bombay, Madras, and Uttar Pradesh which jointly accounted for 71% of Share capital and 60% of sales

Agricultural Non-Credit Societies

There were 937 societies doing lift irrigation work. They had brought more than 107003 acres of land under irrigation. The Farming Societies made noticeable progress in the States of Bombay, Madras, Uttar Pradesh and Punjab. The milk supply unions and Societies also numbered 65 and 1473 resp. They are mainly found in Madras, Andhra, Bombay, Utter Pradesh, and west Bengal.

Non-Agricultural Non-Credit Societies

There were 9087 Industrial Societies out of which 5748 were Weavers Societies. Their membership was 966868, paid up capital Rs. 297.83 lakh, working capital Rs. 861.04 lakh. They sold finished goods valued at Rs. 899.64 lakhs. There were 2046 housing societies in 1953-54, out of these 984 where in Bombay, 170 in Madras and 115 in Andhra. In other States the progress has been insignificant so far. The Labour Contact Societies continued to make progress in Andhra, Madras, Bombay and Saurasthra. During the last two years 52 such societies where registered in Hydrabad.

The other types of Societies such as Forest Labour Societies in Bombay, Transport Societies in Bombay, Delhi, Madhya Pradesh etc., Cooperative work-shops in Madras, Women's Societies in Uttar Pradesh, Bombay, Madras, Delhi and Punjab; Better Living Societies in Hydrabad, Bombay and Uttar Pradesh, Health Societies in West Bengal and Punjab and Education Societies in Uttar Pradesh continued to make their existence felt among these scattered instances of individual success.

Conclusion

From the foregoing account of the Co-operative Movement in India it can be seen that there has been progress in various directions. But compared to the magnitude and complexity of the problem that it is intended to solve, the acheivements are insignificant. The Agricultural Credit has remained preponderant as ever but its performance in this sphere has been negligible. It is aptly observed in the RURAL Credit Survey Report that, "If from this statement of fundamental requirement we turn to the record of cooperative credit in India, we have individual instances of success co-existing with substantial failure in quantitative terms." Co-operative Credit has not reached the majority of Agriculturists, it is quantitatively inadequate, it is based on land as main security, and it is not related to any productive purpose. "It satisfies none of the requisites of good co-operation or sound credit."

In respect of Marketing and Processing also the general picture is dismal. The District and Appex Marketing Societies are either non-existent or inefficient. The business of these societies has been progressively dwindling since decontrol of food grains etc. and the Cooperative Marketing of agricultural produce is utterly neglected. The Consumer Stores also met with severe set-back. In other spheres also progress is uneven and unsubstantial.

Inspite of these features of the present day Co-operation, it has a prospect of bright future. The reorganisation suggested by the All India Rural Credit Societies Report has won a wide measure of acceptance, so as to create the conditions in which co-operation will have a reasonable chance of success. Accordingly the co-operation has been given an important role to play in the economic development, with its emphasis on social change that is envisaged in the Second Five-Year Plan which aims at the building up of co-operative sector as part of the scheme of planned development.

LONG-TERM PLANNING WITHOUT DISTRIBUTION ASPECT

By : **MAHESH CHAND**

ASSUMING that every technique is implemented with the best of efficiency, we may say that a technique is associated inevitably with a certain capital-investment, employment of a certain number of workers and the production of a certain output. The choice of technique, which is a problem facing us in regard to our planned economic development, is therefore dependent not only on the relative productivities of the various techniques but also on the aggregate of resources which have to be found in order to adopt them. If a country has plenty of resources, any student of economics would advise that that technique should be selected which brings the greatest return per unit of resource spent. Such an advice nodoubt does not take account of the distribution aspect nor of the manpower employment. Also the calculations shall generally be based on assumptions of commodity prices and factor-prices.

Incidentally, instead of all factor prices, sometimes a mention is made only of 'wages'. This would be wrong. True, the wage-bill is a significant proportion of the average cost of production, but it shall be wrong to assert that the other part of the cost is positively and highly co-related with the wage-part.

In an environment of scarcity of certain resources, certain analysis of the production situation under different techniques becomes more important. To start with, we may assume a wage-rate and take it to be the unit of measurement of value. We may assume the same wage-rate for the different parts of production-sector. This is not so in reality. We may therefore take an average wage-rate. Or, we may think of a standard wage-rate in each new production unit which may be sufficient to attract manpower. Or, we may work in terms of a wage-rate which is an ideal and which we would like to reach in time to come. It would be better to work with a standard wage-rate instead of an ideal wage-rate. The latter is likely to be higher than the former and calculations shall nodoubt be affected. However, let us choose a common wage-rate and bother about the implications of the different wage-rates common later. Hence the same number (E) will indicate both the number of man-years as well as the wage-bill.

Let us next calculate the capital per man-year. The figure, that may be arrived at may also be termed capital intensity per unit wage. It may be calculated by dividing the value of all capital by (the number of men per year per shift also by the number of shifts worked. If a production unit works seasonally, we may take the season as equivalent to a year. If 1000 men work in each shift throughout the year (including the normal closures) and if there are two shifts, then the number of men per year (or man-years) would be 2000. We may represent the capital intensity by k, and use suffixes such as 'i', 'm' and 'c' to indicate the sector of investment goods, raw materials and consumers goods.

In calculating the value of capital, we may either take the cost-value of all equipments including the normal stocks and stores which have to be maintained. Or, we may take the value of the machines and follow the practice of accepting three times this value as the estimate of capital. If we follow the latter method for practical convenience, it must be borne in mind that if, in practice, it varies, it shall greatly affect the calculations of capital contents of various techniques.

* No originality is claimed beyond presentation in our own way and the criticism.

We may similarly calculate the value of the annual production (in the wage units) per man-year and term it labour-productivity. In the calculation of the value of annual production account shall be taken of all types of production—main as well as by products—which are sold by the production unit. We may calculate the value of product per man year and then divide it by the standard wage rate. The labour productivity thus calculated may be represented by p_1 : for the sake of simplicity we will write only p :--

$$p = V_1/W$$

where V_1 is the value per man-year and W is the standard wage-rate.

The value of p's for different industries will then depend on the prices of the various products : so with different price-levels the same techniques would have different productivities. In order to reduce this difficulty, it is infrequently suggested that the productivities calculated at different times be reduced to constant prices, i. e., to prices prevailing in a base-year. If we do so, it would imply that the different prices in the base-year are equivalent to each other : This is wrong. If we reduce the value of substitutes to a common price, it would be better, but it would create complications when evaluating the value of consumer goods. Valuation at higher prices would increase the value of 'p' and hence of total production of consumer goods, and this shall be misleading when assessing self-sufficiency of the economy.

When considering an individual production unit, we may say that the net produce per worker should be greater than the standard wage rate. The concept of net produce is the same as of net value added by manufacture. But where calculations are made at the social (or national) level, we may work with the gross produce.

Let the number of man-years needed for each production sector be indicated by E. This will also mean the number of workers needed. As usual suffixes to E may indicate the sector concerned.

If we conceive of two sectors in the economy, viz., investment goods and consumer goods, we may assume that the investment per worker needed is k_i and k_c respectively. If K be the total investment, then it must be equal to $E_i k_i + E_c k_c$, where $E_i k_i$ and $E_c k_c$ are respectively the investment in the two sectors.

Again, it is reasonable to argue that the consumption requirements of the workers $(E_i + E_c)$ must be at least met out of the consumer goods produced, which is evidentaly $E_c p_c$. If we assume that workers spend all that they earn on consumption, their total expenditure on consumption shall be $(E_i + E_c)$ W, or only $E + E_c$ in the wage-units. This expenditure must atleast equal the total consumer goods produced.

We thus get two equations from which the values of E_i and E_c can be calculated in terms of k's, p's and K :--

$$E_c p_c = E_i + E_c \text{ and } E_c k_c + E_i k_i = k$$

$$E_c = \frac{E_i}{p_c - 1} = \frac{K}{k_i(p_c - 1) + k_c}$$

Knowing E_i and E_c, we can also calculate the value of production in each of the sectors by the formula E. p. $E_i p_i$ will be the produce in the investment sector and $E_c p_c$, in the consumer goods sector.

Here K is the total investment. It may be the total investment in the economy of India. Or, it may be the total investment which the Government intends to make during a Five—Year Plan and whose effect we may like to watch. Each method of production is characterised by a specific value of k and p and implies a certain standard of living for the workers as measured by W. If we have a number of techniques open to us in each of the two sectors, we shall have to choose a combination of techniques which satisfies our

planning aim most. A number of cases may be mentioned in this connection :—

A. If we aim to maximise the production of producer goods, we may choose a technique-combination which will maximise $E_i p_i$.

B. If maximum employment is the aim, then we may choose that technique-combination which will maximise $E + E_c$ i. e., $Kp_c [k_c + k_i (p_c - 1)]$

C. If we want to have maximum of consumer goods, we may choose a technique-combination which maximises $E_c p_c$.

D. If the aim is to maximise the surplus of consumer goods so that something may become available for those working in the old economy sector, we may first fix this surplus (S) and then weigh the results. It shall mean that the two equations, that we wrote, may now be written as follow :—

$$E_c p_c = E_i + E_c + S$$
$$E_c k_c + E_i k_i = K$$

The values of E_i and E_c can be calculated, so also $E_i P$ and $E_c p_c$ and we may then apply the cases 'A', 'B' and 'C' also thereafter.

It is this case which is more relevant to our country. In this connection it would be relevant to say that if we want to make 10% more consumer goods to the workers in the old sector, we must also make a similar provision for workers in the new production units which shall be set up due to the investment K. The purpose will be served if we put 1.1W in place of W, i. e, if we divide k's and p's by 1.1 in the formulae mentioned, it will be insufficient to divide only p's.

This type of approach is implied seemingly in the papers which Prof. Mahalanobis has of late contributed to the pages of Sankhya, to one of which we shall make more reference below.

The situation can be made more detailed by visualising more sectors. Prof. Mahalanobis divided the consumers goods sector into three parts. We may add that for the economy as a whole we may visualise a third sector, viz., raw materials sector, which shall be used up by the other two sectors. If 'm' be the suffix for this sector, its total production will be $E_m p_m$ and if g_i and g_c be the raw materials required per unit of production in the 'i' and 'c' sectors respectively, the total requirement shall be $E_i p_i g + E p_c g_c$ which must equal $E_m p_m$. The equations of total consumption and total investment will also now change slightly and we shall have the following equations.

$$E_c P_c = E_i + E_m + E_c + S$$
$$E_m P_m = E_i p_i g_i + E_c p_c g_c$$
$$K = E_i k_i + E_m k_m + E_c k_c$$

It will be easier to solve the first two equations for E_i, E_m, and E_c proportionally and then use the third equation for finding their absolute values. The results are mentioned below :—

$$\frac{E_m}{p_i g_i (p_c - 1) + p_c g_c} = \frac{E_i}{p_m (p_c - 1) - p_c g_c}$$
$$= \frac{E_c}{p_j g + p_m} = \frac{E_m k_m + E_i k_i + E_c k_c}{H} = \frac{K}{H}$$

where H is the total of first three denominators after respectively multiplying them by k_m, k_i, and k_c.

II

Such mathematical gymnastics can be multiplied. Instead of indulging in the same, let it be mentioned that Prof. Mahalanobis has used the following equations on which he has based his allocations of funds, in the Second Five--Year Plan and given estimates for sectoral production and employment :

$$E = E_i + E_1 + E_2 + E_3 = a_i k/k_i + a_1 K/k_1 + a_2 K/k_2 + a_3 K/k_3$$

$$1 = a_i + a_1 + a_2 + a_3$$
$$dY = Y_o (1 - R)^5 - 1 = K(a_i B_i + a_1 B_1 + a_2 B_2 + a_3 B_3)$$

The Symbols are not exactly what the Professor has used. However, Y_o is the initial national income. R is the rate of increase per year to be fixed by the planners.

dY is the increase in national income expected in 5 years. B represents the ratio of income to capital, i. e., it is the reciprocal of capital-output ratio. 'a' is the proportion of K invested in a particular sector. 'i', 1, 2 and 3 are suffixes used to indicate the investment sector, large scale consumer goods, 'small scale and household industries' and 'services' respectively.

The Professor assumes that income must increase at the rate of 5% per annum compound rate: that jobs must be found for 11 million people and that 5600 crores of rupees can be invested for this purpose. The income in 1956 is also assumed to be given. He estimates the values of B's and k's from data available on account of census of manufactures national sample surveys, ad hoc surveys and so on. The only thing that he is therefore left to determine are the a's, of which he fixes a_i from before. The three linear equations given above are then sufficient to determine a_1, a_2 and a_3. and thereafter he is able to say what should be the employment provided in the different sectors and what shall be the contribution of the different sectors to the increase in national income.

An alternative method--and perhaps a better method—would be to assume productivity per worker in each of the four sectors and solve for E's, assuming that, like the Professor, we would fix a_i and hence $E_i (= a_i K/k_i)$ first. The equations then would be as follows :—

$$E = E_i + E_1 + E_2 + E_3$$

$$K = E_i k_i + E_1 k_1 + E_2 k_2 + E_3 k_3$$

$$dY = E_i p_i + E_1 p_1 = E_2 p_2 + E_3 p_3$$

In these equations both k's and p's are investment and produce *per* worker, i. e., with a common denominator while in Prof. Mahalanobis equations k's and B's are not with reference to the same denominator.

There has been some discussion in the country about the employment and unemployment aspect of the Second Five-Year Plan. It has been maintained by some that the Plan cannot create employment for 11 million persons: and that in any case the unemployment crisis shall be worse in 1961 than in 1956. It must be added in defence of the equations used by Prof. Mahalanobis that the results are right if the following assumptions are not objected to :—

A. The values of K's and B's are acceptable estimates, i. e., the information on which they are based is deemed sufficient at present.

B. The linear relationship between production, employment and investment is allowed.

If some of us wanted to plan for an additional employment of 15 million persons, we have only to use 15 in place of 11 for E in the equations given above.

We can question the propriety of predetermining 'a_i' at 0.33 and of planning for an investment of Rs. 5600 crores without being very clear about the practicability of mobilising this resource. We may also say that only the production aspect is considered in these equations. The distribution part, particularly the role and the fate of 'wages' is ignored. So far as this last point is considered the set of equations suggested as an alternative by us would be better: both k and p could be measured in wage units.

Another point that we may raise concerns the condition that the additional consumer goods should be sufficient to meet the consumption requirements of the additional workers. Really this condition would not be sufficient because the additional consumer goods—at least so far as agricultural foodstuffs are concerned--would be substantially produced by those who are under-nourished.

If the tillers produce more food, they are apt to consume more themselves. So the condition would have to be of the type—

$$E_c P^c = E_i + E_1 + E_2 + E_3 + S$$

Where S stands for a surplus of consumer goods for those employed in the pre-plan economy.

Yet another point that could be raised against the equations is the implication that no regard is kept of the time-lag between (i) the creation of the demand $E_i+E_1+E_2$ and (ii) the supply of E_cP_c.

It is also to be pointed out that no consideration is made of the factor 'organisation'. it is lumped together with 'labour'. As we have time and again pointed out in these pages, the organisational inefficiency is likely to be a worst bottleneck in fulfilling the Plan targets.

Prof. Mahalanobis has held the opinion that the overall income-investment coefficient (B) may be taken to be 0.5. If so, then an investment of Rs. 5600 crores would be necessary if we want the national income to increase from Rs. 10800 crores by Rs. 2800 crores. The equations which Prof. Mahalanobis has written in his paper on 'The Approach of Operational Research' to Planning in India provide way to calculate the value of B:—

$$dY = Y_0\ [\ (1+R)^5-1] = K\ (a_iB\ +a_1B_1+a_2B_2+a_3B_3)$$

$$B = (a_iB_1\ +a_1B_1+a_2B_2+a_3B_3)$$

From these two equations it follows that $B = dY/K = 10800\ \ (1:176-1)\ /5600 = 1/3:16$

This value of B is inconsistent with the value 0.5 mentioned above. If **B** is to be 0.5, then the total planned investment for a 5% annual increase in the national income should not have been Rs. 5600 crores but 2.5600/3:16; i.e., about Rs. 3800 crores. If we include investments to be made by the private sector in addition to ths Government investment of Rs. 5600/ crores, the value of **B** will decrease further. Thus if Rs. 1400 crores would be additional investment by the private sector, B will become $\frac{1}{3}$..95 instead of $\frac{1}{3}$. 16. This will be still smaller than 0.5.

It must be added in fairness to the master-planner that the figure of Rs. 5600 was not arrived at to secure an increase in national income of Rs. 2800 crores but on the basis that the percentage on national income that can be invested, can be 9% on an average. The student of economics is apt to question the propriety of this acceptance of self-tendered advice of the planners.

We referred to two assumptions of the Plan. We know that generally the production is taken to be a logarithmic function of labour and capital :—

$$L_{og}\ P = q_0 + q_1K + q_2E$$

where P stands for production, K for investment and E for number of workers. The q's are coefficients; and not infrequently $q_1 + q_{2m} = 1$. On the basis of this equation, it follows that :-

P = K times Partial marginal productivity of 'k'

= E times Partial marginal productivity of 'E'. Prof. Mahalanobis has used the average productivity of K and E instead of the partial marginal productivities. This should mean an over-estimation of investment-requirements so far extension of the present production capacities is concerned.

III

Though Prof. Mahalanobis evidently has had little choice to nake regarding techniques for the Fiv -Year Plan, the problem does arise w.hen we come to details. We therefore revert to it again below.

We have indicated above that the technological choice can be made with reference to maximising employment, total output, producer goods or the of growth of national income (or national gross product). If we ignore the distribution problem, the rate of national income should be maximised.

The relative yield per unit of total investment (K) in the investment (i) and consumer goods sectors are given by P/K and P_c/K respectively where P and P_c are the total products of the two sectors. Let these be indicated by symbols r_i and r_c repectively.

If we have a choice between three techniques for each of the i th and c th sectors, we may calculate P_i and P_c for certain hypothetical values as follows ;— assuming $K = 1000$:—

Techniques Consumer goods (K ; p)

Producer goods	C_1		C_2	
(K ; p)	(24 ; 16)		(2 ; 2)	
	P_i	P_c	P_i	P_c
I_1 (80 ; 20)	245.1	13.07	246.91	24.69
I_2 (10 ; 4)	344.83	91.9	363.64	181.82
I_3 (35 ; 2.5)	378.79	151.41	416.67	333.33

The three choices in the i th sector correspond to income-investment ratios 1/4, 1/2.5 and 1/2 while those for the c th sector correspond to ratios 1/2 and 1/1.

If P has to be maximised, the technique-combination that should be selected is C_2I_3 for which r is maximum 0.4167. If we assume that the resulting producer goods, P_1, are reinvested in the i th sector, next year we shall find the total investment to be:

$$K + P_i \text{ or } K + Kr_i \text{ or } K(1 + r_i)$$

and for succeeding years a table can be drawn up as follows :--

Total Investment	Production of producer goods	Consumers goods
K	Kr_i	Kr_c
$K(1+r_i)$	$Kr_i(1+r)_2$	$Kr_c(1+r_i)_2$
$K(1+r_i)$	$Kr_i(1+r)^2$	$Kr^c(1+r_i)^2$
$K(1+r_i)^{t-1}$	$Kr(1+r_i)^{t-1}$	$Kr_c(1+r_i)^{t-1}$

Hence gross production due to investment K originally and the policy of reinvesting the produce of the i th sector will be :-

$$p_t = K(1 + r_i)^{t-1}(r + r_c)$$

If K is the net new investment flowing out of the initial production organisation, and if it continues to flow out at this rate we shall have to think of $P_i(t-1)\, P_i(t-2)$......, p_1 and the total of these P's shall give the gross product at time t :—

$$\Sigma P = K(r_i + r_c)\,\frac{(1 + r_i)^t - 1}{(1 + r_i) - 1}$$

To this we must add the goods produced by the old economy in the 't' th year. If we indicate it by P_c, we get

$$P_0 + K(r_i + r^c)\,\frac{(1 + r\ )^t - 1}{r_i}$$

If the total production from the old economy (excluding what is necessary for replacement within it) be $Y (= P.)$ and if aY was equal to K, we can write the above expression as follows :—

$$Y\left[1 + a(r_i + r_c)\,\frac{(1 + r\ )^t - 1}{r_i}\right]$$

which is what Prof. Mahalanobis has written in another form in *Sankhya* recently (*vide* ibid, vol. 16 Dec. 1955). The production of the producer goods sector will be

$$K + Kr_i\,\frac{(1 + r_j)^t - 1}{r_i} \text{ or } k(1 + k_j)^t$$

The production of the consumer goods sector will be

$$Y(1 - a) + \frac{Kr_c}{r_i}\left\{(1 + r_i)^t - 1\right\}$$

In choosing the different techniques we may adopt the following criteria :-

A. The production of investment goods per unit of investment be maximum.

B. The gross production may be as great as possible. If the gross production is substantially greater for a technique-combination while there is little difference between the two corresponding values of r_i, then the former technique-combination may be selected. Thus in the given example C_2I_3 is preferable to C_1I_3 as in the latter case the value of P_c is more than double of its value in the former case.

C. The production of consumer goods may be greatest (a) after a time or (b) over the whole lifetime of the consumer goods equipment produced.

If between two technique-combinations the values of r are not much different, as in the case of C_1I_2 and C_2I_2 then the third criterion shall tilt the scale in favour of the technique-combination for which P_c

is greater. If however the r_I values are substantially different, it shall be difficult to draw such a conclusion.

In the above presentation we have so far assumed that the wage rate is the same everywhere, both in the C and the I sectors and that it remains the same from year to year. We may consider two cases in this connection :—

1. When the wage rates have to be increased in the new production units.

2. When the wage rates have to be increased both in the old and the new economic sectors.

In the first case increased wage rate (w) will reduce the values of p_I and p_c. One may therefore recalculate the values of P_i and P_c for different technique combinations, but that will be wrong. Increased w will also affect the value of k's which is capital per unit of wage paid. So, each of k_i, k_c, p and p_c will get divided by (1+b) if the new wage is given by w^1:—

$$w' = w(1+b)$$

It is easy to see from the formulae for the values of P_i and P_c that both will decrease, but the decrease will be greater in the case of P_i because it carries $p_i (p_c - 1)$ in the numerator as against only p_c in the case of P_c.

We can therefore say that for two different technique-combinations, the values of r_i will be less if wages are more : hence the difference between the two r_i's will now be less than before. [it is easy to understand that the difference between $\frac{1}{2}$A and $\frac{1}{2}$ B is less than between A and B, : and this is true if instead of $\frac{1}{2}$ we have some other fraction.] When the difference between r_I-values will be less, the values of P_c for the various technique-combinations shall be a more important cause of final decision under criteria 'B' and 'C' mentioned above. However, since all P and P_c are likely to change in the same proportion, the choice of the technique-combination is not likely to alter significantly from what it was before.

It will be noted that increasing the wages cannot lead to an increase in consumption —really, it may lead to a decrease because, as we have seen, P_c will decrease. If our policy is to provide more consumption goods to the workers, it depends on producing more consumer goods. If wages are increased without increasing the volume of consumer goods, the result shall be that there shall be more money and hence higher prices will be the consequence.

This shall apply with greater force if more investment is made in the producer goods sector and hence more money is placed in the hands of more workers (public) without placing a proportionate...if not more than proportionate—quantity of consumer goods.

If wages have to be increased in the old production sector as well, the danger–in an environment of money wages and money economy–will be greater still. If possible, next month we shall examine the situation in the presence of an old production sector.

Meanwhile, we must emphasize that this danger has seemingly escaped adequate attention of our plan-administrators. There is no wonder, therefore, that since October 1955 we have been experiencing a rising price level. The rising demand, particularly from non-producers of food, raises prices in the distribution market first and then in the collection market. This places more money in the hands of the producers, who therefore, find that they need dispose a lesser proportion of their produce to meet their cash commitments. They are therefore able to consume more food thereby decreasing the supply available in the distribution market where the prices have already been rising. The prices therefore get a second spurt. In the last issue we had ended with the conclusion that agricultural production must be raised faster. It seems the Government has

realised the need for increasing the agricultural targets in the Second Five-Year Plan The conclusion that we reach now is that those who put too much faith by figures and models are apt to drift away from commonsense. The Government would be well advised to take into account the conclusions of commonsense-economics also.

As a digression we may add that the cost of living indices increased by about 2% and 4% in Japan, U. S. A. and U. K. respectively during October 1955 to June 1956. The percent increase in the consumers price index numbers for working class in India for Kanpur and Bombay was between 7 and 9 percent. According to the index number of wholesale prices in India between February and October, 1956 the prices of food and semi-manufactured goods rose by about 16 to 18 percent while the prices of industrial raw materials increased by about 9%. During the twelve months ending August 1956, the money supply with the public increased by 142 crores of which 137 crores was due to increase in the total currency with the public. We attribute this to increased expenditure in the investment goods sector (I).

It must be added also that in a paper on "The Approach of Operational Research to Planning in India", in connection with the five limiting factors, it was written:

"In the present approach the strategy is to balance the increase in demand created by investments in the heavy capital-intensive industries and expenditure on services by **adequate production of consumer goods** at first through small and household industries. (Italics ours). The rate of development, if inflation is to be avoided, would be determined by the amount of surplus consumer goods which can be actually produced". (Sankhya, Vol. 16, Nos. 1-2, Dec. '55, p. 23)

It appears that the mention of small and household industries has been interpreted literally and 'agriculture' has been excluded. This is a mistake. Another mistake seems to arise out of the brief treatment of the financial resourcess as a limiting factor. The raising of adequate financial resources, it was said, "involves technical questions of monetary and financial policy but ultimately the basic decisions must be made on broad social and political considerations". The latter part of the sentence seemed to be little the undesirability of deficit budgeting and deficit financing. The Panel of Economists also seem to have failed to speak with one voice or to have sized the situation well. The new Finance Commission seems to realise the need for balanced budgets now.

AGRICULTURE IN NATIONAL ECONOMY

By: **A. N. SHARMA**

ABOUT two thirds of the total world population is agricultural. Industry is estimated to account for 14% of all the people on the globe, commerce for 6% and the remaining 13% consists of those engaged in transportation, mining, professions and domestic occupations. Thus even in this highly industrial-cum-commercial and urban era, agriculture continues as the main occupation of the greater part of man-

kind. The point is illustrated by the following table :—[1]

Area	Total population (Million)	Agricultural population (million)	Agricultural population as % of Total.
North America	163	33	20
Europe	391	129	33
Oceania	12	4	33
South America	107	64	60
Central America	50	33	67
Asia	1,255	878	70
Africa	198	146	74
Total	2,177	1,285	59

Of the total population of the world, some 60% or almost 1300 million people are dependent upon agriculture. Of these 1000 millions live in Asia, Africa, Central and South America and only 162 million in Europe and North America. Whereas in Europe only one person out of three and in North America only one person in five is dependant on agriculture, in Asia and Africa three out of every four obtain their living from land.

Looking at from this angle into Indian conditions we see that :—[2]

Items.	Number of persons engaged.	
	Earners plus non-earners (in lakhs)	Percentage
Agriculture	2,490	69.8
Mining plus manufacturing and Handicrafts.	376	10.5
Commerce plus transport and communication.	269	7.5
Other services.	429	12.2

In India 69.8% of the population depend on agriculture alone. In mining, manufacturing and handicraft 10.5% population is engaged, 7.5 is in commerce, transport and communication, and the other services have the share of 12.2% of the whole population.

Again, agriculture employs a large fraction of the people the world at large, and welfare of so large a group of people is necessarily a matter of great concern. It furnishes us important raw materials for trade and manufacture, so that large non-farming groups are provided work and employment by the volume of the output available to be handled. Moreover, fluctuation in the purchasing power of so large a group inevitably affects the income of other sections of the population. Agriculture is also an essential industry, or rather a group of essential industries. It also produces raw materials, for clothing, household and industrial uses.

The importance of agriculture is not only limited to the production of large quantity of raw materials but it is more so in terms of value of net-output.

The following table gives National output of India.*

Items	Net Output	
	Rs. in lakhs	P. C.
Agriculture, animal husbandry and ancillary activities.	4,780	50.06
Forestry and fishery.	110	1.15
Mining.	70	0.74
Factory estabishment plus small enterprise.	1,460	15.28
Commerce, Transport and Communication.	1,690	17 70
Other services.	1,440	15.07
Total.	9,550	100.00

1 Land Reform—U. N. Publication (1951)

2 Labour Census Report 1954.

* National Income Committee Report (Final) 1954, P. 384.

Here agriculture holds the highest priority. This is borne out by the fact that in most of the Countries agriculture is considered as the sole industry. With equal prosperity modern agriculture may be regarded as a group of industries overlapping indeed but more or less divergent. Of course, there are some countries in which agriculture no longer ranks first in respect of workers or net value of output. According to U. N. census, agriculture has been surpassed by a group of manufacturing and mechanical industries, including construction, trade and transportation in a number of Countries in providing gainful employment to workers of 16 years and more. Nevertheless, taking the world as a whole the largest number of people are engaged in agriculture even today.

Agriculture being the primary industry not only feeds the world, but it provides considerable volume of raw materials which feed the manufacturing plants. Agriculture existed in the world long before our forefathers dreamt of great matropolitan industrial cities. And while conditions were primitive in those days, evidences as are available point out to the fact that they were as satisfied with their conditions of life as we are today with this highly evolved civilized life of ours. But never in the history of the world has it been possible nor will it be so in future to have a civilization all urban and industrial.

Agriculture In the First Five-Year Plan :—

The pattern of investment in agriculture in first Five-Year Plan is as follows :—*

	Rs. Crores	P. C. of outlay.	
Agriculture and community Development.	361	17.5	1 44.6
Irrigation,	168	8.1	
Multipurpose irrigation and power projects.	2661	2.9	
Power.	127	6.1	
Transport and communication.	497	24.0	
Industry.	173	8.3	
Social Services.	340	16.4	
Rehabilitation.	85	4.1	
Miscellaneous.	52	2.5	
	2069	100.0	

These Plans are said to establish socialistic pattern of society. In the first five-year plan agricultural group is given top priority (44.6%) and therefore it is commonly known as agricultural plan. We have grouped the first four items in one group because all these contribute to raise the standard of the agricultural class. If we examine critically, then agriculture comes only next to transport and communication. The following reasons compelled the Planning Commision to give priority to agriculture in the first plan :—

I. Partition of the country which created imbalance in India's economy.

II. By devoting heavy expenditure on public utilities they had laid foundation not only for agriculture but also for industry.

Therefore agriculture plays a vital role in national economy.

Agriculture in second Five-year Plan :—

As against a total outlay of Rs. 2069 crores (later revised to Rs. 2248 Crores) for the First Five-Year Plan, the Second Plan envisages a total expenditures of Rs. 4300 Crores in public sector and

* Later. Rs. 175 Crores were set apart for creating employment opportunities in the First five-year plan, popular Edition p. 35.

Rs. 2200 crores in the private sector. The nature of investment is as follows :—*

Items	Invest-ment.	Current	Total	P. C.
Agriculture, irrigation & community development.	750	200	950	22.5
Power	450	–	450	10.5
Transport and Communication	850	100	950	22.0
Industry and minerals,	1000	100	1100	26
Construction and social services	250	500	750	17
Stock.	100	—	100	2
Total.	3,400	900	4300	100

This plan is said to be an industrial plan because highest priority is given to industry but even here agriculture is not altogether neglected but it comes next to industry and minerals (26%). The investment percentage to agriculture is 22.5%. Thus we may say that even in this highly industrialized era agriculture cannot be neglected.

*Second Five-year Plan (Summary) P.20

Conclusion

From the above discussion we arrive to the conclusion that even today agriculture is the primary occupation in most of the countries of the world. It may also be stated that it is the main occupation of the rural communities.

It may be that this emphasis on agriculture may go on decreasing as we proceed more and more towards urbanization and industrialization as has been indicated by many American (J. D. Black) and English economists (5-6% in National Income). To reach to this stage of industrialisation for we Asian people it will take atlast one hundred years. It is beyond the scope of this paper to foresee things regarding future. But it is beyond dispute at the present that agriculture surpasses all other industries in national output as well as in the employment of labour population in most of the countries of the world.

LAND REFORMS IN EGYPT

By: **JIVAN DATT**

DURING my recent visit to continent and Egypt I had an opportunity of studying the working of co-operative movement in England and Denmark, Folk Schools in Denmark and working of combined centres and land settlement Zones in Egypt.

In this article I propose to give in brief the Agrarian reforms which have been carried out by the Revolutionary Council in Egypt during a short period of 3 years. In view of the difficulties we are experiencing in India in the cultivation of land distributed through BHOODAN MOVEMENT, this article on land reforms and rehabilitation of families through land settlement Zones will be of special interest to our country.

One of the earliest reforms carried out by the new regime in Egypt, after the start of the revolution in 1952, was the land reforms programme of which the country was in dire need. During the old regime some members of the Parliament recognised the injustice of the feudal system in Egypt and even introduced bills designed to curb the large land-holders and to return the land to the actual tillers of the soil. Unfortunately all these attempts with regard to agrarian reforms or the fixation of minimum wages failed and these bills could not get through.

Agriculture has always been the major element in Egypt's economic strength as the majority of the population (60% out of

22 millions) depends on it for their livelihood. There are 6 million acres of land under cultivation. The ownership of the land was in the past fantastically out of balance because of feudalistic system which prevailed for many generations. A great part of the arable land was consolidated in the hands of a small wealthy minority. At the beginning of the new regime there were about 26 lakhs land-owners, but 70% of them (18 lakhs land-owners) held an average of less than ½ acre. Obviously, these people were kept in a state of almost incredible poverty. At the same time people with money to invest were using it to bid against each other for more and more land. The result was that the land prices Continued to to spiral far above their true value, so that farm tenants and labourers were squeezed out. Besides, no money was left for investment in industry and commerce which could provide jobs and increase national income.

If Egypt were to move out of this stagnating feudalism which had been impoverishing a great majority of its people, it was obvious that prompt and effective action had to be taken. By fixing the maximum limit of ownership to 200 feddans (a feddan is little more than an acre), land reform law created equilibrium in the State, in politics and social life. Land distribution created a new class of land-owners. The number of those who have been benefited by acquiring parts of the land is two lakh families representing 12 lakh individuals.

Another interesting thing is that agrarian reform of Egypt not only benefits those who become land-owners but it affects the welfare of all those who work in agriculture as it has fixed the rent throughout the Republic at 7 times the basic land tax. In the past land-owners used to charge very high rent and there was no law to back these small farmers in demanding justice.

Agrarian Reform does not only mean redistribution of land in Egypt but also aims at how to maintain and increase production and to secure a decent standard of living for the farmers. The Republic of Egypt has been divided into 22 regions and the area of each region varies between 2000 to 10,000 feddans. During my visit to land settlement zones, which was arranged through the good offices of the Ministry of Social Affairs, I was surprised to find that the farmer with an average holding of 3-5 acres was leading a very happy and contented life. It was found that after the distribution of land, the farmers were not left to themselves but every kind of help was also given to them through the Co-operative Societies established in their regions and by various productive projects. The Land Reform Law also included special provision for the rights of agricultural labourers in demanding equitable wages.

Moreover, it stimulates industry through the diversion of capital from land speculation to productive enterprise. Meanwhile, land reclamation had gone side by side with land reform in order to enlarge the cultivable area to lessen the stress of population on it and to increase the number of new small land-owners.

It will not be out of place to mention that as soon as Mohammad Ali gained control of Egypt he began the wholesale confiscation of thousands of acres of rich, arable land. He did not even engage in the pretence of paying compensation for the confiscated land. The best and richest lands, thus seized, were presented as gifts from Mohammed Ali to his relatives and friends. Under his rule, forced labour was the only contract between the land-owners and the farmer. Whether a farmer worked on a large estate as a farm hand or tilled his own soil, conditions were oppressive. The poverty of these people, whose families were on the verge of starvation, while their food crops were taken from them and sent to market, proved intolerable. It remained

so under Mohammed Ali's successors for about 150 years, a vicious system of poverty for the many and plenty for a few.

The evils of the feudal system continued till the Agrarian Law was passed on 9th September, 1952. This law was drafted by a group of experts in agriculture and economists and other experts in Egypt and no phase of agriculture was forgotten in the preparation of the law. The detailed plan of distribution took into account the best interests of the people and of the land.

Reclamation was encouraged by permitting holders of fallow or desert land to own as much of this type of land as they wished to reclaim. Such owners may hold the land for 25 years, thus permitting them to reclaim the land and then farm it for a sufficient number of years to enable them to regain their investment and also make a reasonable profit.

In selling the acquired land, the Government stipulated as to whom and how the land should be sold. Under certain conditions agricultural college graduates favoured. They are given priority in purchase of orchard which obviously requires technical skill to maintain and develop. Similarly people, who live near the land on sale and would actually farm it, were given first preference. Next comes the farmers with the greatest number of children and so on. To prevent feudalism from arising again, the law prevents the owner from renting his land to any one other than a person who is a farmer and who will actually till the soil. The farmer in turn may sub-let a portion of his land only to another farmer. In short, the main objective of the law is to return the land primarily to the farmer. With a view to accommodate the poor farmers, the law provides that a person purchasing land from the Government may do without a down payment. He may pay for the land upto 30 years. The purchase price is the price actually paid to the land-owner plus a 15% for distribution and other expense. The 3% interest rate is charged on the balance of principal due. From the above it will be seen that every farmer was given an opportunity without a down payment to buy his own small farm.

The law in few lines

The Land Reform Law (No. 178) was promulgated on 9th Sept. 1952. It is considered the first measure of reform taken immediately after the military revolution.

The first article of the law provides that–

"No person may possess more than 200 feddans of agricultural land. Any contract involving contravention of this provision shall be considered invalid and cannot be passed for law registration".

The law aims at abolishing agricultural feudalism and at equitable redistribution of land by limiting the maximum ownership by 200 feddans. The law also grants the proprietor the right to transfer to his children 50 feddans each provided that the total to be so disposed of does not exceed 100 feddans.

*The ex-proprietor is given as compensation an indemnity in form of State Bonds equivalent to 70 times the basic land tax redeemable in a period of 30 years with an interest of 3%.

The new land owner pays the price of the plot of land he acquires in equal annual instalments in a period of 30 years with the addition thereto of 1) 3% interest, 2) 15% additional expenses and price of constructions.

*The rent of all agricultural land in the Republic is fixed according to the Land Reform Law at 7 times the basic land tax.

Consequently 75% of those who cultivate the land in Egypt benefited from such fixation.

*Article 32 of the Land Reforms Law stipulates that the land should be rented only to a person undertaking to cultivate it personally.

Article 33 of the law puts the restriction that the rent of agricultural land may not exceed 7 times the basic land tax assessed upon such land. In the case of a rent on crop-share, the share of the owner shall not exceed the half after deduction of all expenses.

*Article 10 of the law provides that orchards shall be distributed among graduates of agricultural institutes, after such orchards have been partitioned as not to interfere with their effective exploitation. The parcel granted may not exceed 20 feddans. The graduate of an institute benefiting under such distribution must not own more than 10 feddans of agricultural land.

* The law did not omit the right of agricultural workers, Chapter VI article 38 deals with fixing their wages and grants them for the first time in Egypt, the right to form their own syndicates to defend their common interests.

Requisition And Transitional Period

The execution of the Scheme started by requisitioning the areas exceeding the maximum limit of 200 feddans of individual property. The Higher Committee started by requisitioning the bigger holdings, the total area thus acquired upto end of 1955 amounted to 3 lakhs feddans including over, 22,000 feddans confiscated from the Mohammed Ali family.

The requisitioning of land was followed by the assembling of such land as well as by de-limiting the share of individuals whose lands were not to be requisitioned. The number of requisitioned installations amounted to 258 tractors, 378 irrigating machines, 21 mechanical workshops and several lorries, Jeeps and cars etc.

Land distribution and social research

Before distributing plots of land, technicians from the Higher Committee, studied the following four important points governing the process of distribution :—

(1) Checking the number of the tenants in 1951-52 from the registers of every farm and especially those who still continue cultivating the land.

(2) Social researchers studied the living conditions of every tenant, as well as of his family, from the economic and social points of view.

(3) The return of every feddan is assessed according to the three year system of rotation in order to determine the income per feddan when transferred to its new land owner.

(4) The average cost of a family is assessed according to the number of its members.

Thus the necessary area securing to a family a suitable income to cope with its cost of living, could be delimited.

The land requisitioned in each village was distributed among small farmers, so that each one of them could have a small holding of not less than two feddans and not more than five feddans, according to the quality of the land.

Priority was given to those who actually cultivated the land, whether as tenants or farmers, thereafter to those having the largest family among the inhabitants of the village, then to non-inhabitants of the village.

Some families were so large in number that the maximum limit of five feddans could not be sufficient to cope with the cost of their living. Thus they were divided into sub-families in order that each family could have a separate holding.

When distributing plots of land, the following points were taken into consideration :-

(1) Generally the holdings allowed to the new land owners should be as near as possible to the zones where they live.

(2) Land owners of smaller holdings should have them nearer to their homes.

(3) Each holding is divided into three equal strips so as to apply the three year system of rotation.

(4) Homogeneity between the new land owners should be observed.

(5) A suitable area should be left around every dwelling area for future constructions.

Working of Co-operatives

An interesting article on the Land Reforms Law provided that an agricultural co-operative society was to be constituted from among the farmers who acquired the requisitioned land in the same village and not owning more than 5 feddans in such village. The Higher Committee set down the bye laws of the co-operatives founded in the distributed areas. Capital of those societies is unlimited and is in form of subscription paid by the members equivalent in a number to the number of feddans owned or cultivated by the members. The object of establishing these co-opeative societies was to provide its members with both economic and social services. To achieve such an object, the main aim of the co-operative society is :-

(1) To increase the income of its members through improving land productivity.

(2) To provide the members with the necessary finance and to carry out the marketing of their crops at the least possible expenses.

(3) To establish different agricultural industries.

(4) To undertake selective breeding.

(5) To establish necessary institutions and public utilities to the benefit of its members.

Upto July 1954, 46 co-operatives were already established. The number of its members is 20511. The total of the areas controlled by these co-operatives amounted to 62,330 feddans. In short, the Land Reform not only dealt with the question of distribution of land, but also helped the farmers with materials and technical assistance through the co-operative societies to enable them to get the maximum yield.

Other activities under land reforms

The Higher Committee for Land Reform allotted the cash surplus of its profit to carry out different economic and social schemes for the benefit of the farmers with a view to increase their income. Such Schemes included adoption of agricultural industry, development of animal breeding, establishment of model farms, expanded use of agricultural machinery etc.

It was due to the working of the successful co-operatives that has made every farmer to whom the land has been distributed a happy and contented man. It is my honest feeling that this method can be successfully employed in India and particularly in the Bihar State and I am sure that what Egypt has done, can be successfully done in our country. The relation between agricultural credit and the land tenure system and detailed working of co-operative societies and the working of community projects (known as combined centres) in Egypt will be dealt in a separate article.

BREEDING OF SILK WORMS AS A COTTAGE INDUSTRY

By: **APPADHORAI MUDALIAR**

IT is nothing short of a fool-hardiness to go against certain established traditions, by resorting to undreamt of and patently ridiculous innovations thoughtlessly, only with the object of coming into lime-light, regardless of results, which would prove otherwise. This has been one of the causes for the backwardness of the Sericultural Industry in our country.

It is a well-known fact that Italy, France Russia, China and Japan, have made spectacular progress in building up the Sericultural Industry. But these countries, have at no time ventured upon innovations extolled as in India. Their progress has been based on the solid foundation of uninterrupted and concentrated researches carried out by Scientists of international fame. The results of their whole-hearted co-operation, utmost devotion and steadfast attention, have been adopted by the technicians, who have been responsible for the rapid progress of the industry. These technicians, have diligently followed the research results and demonstrated them on a field-scale, which has brought home the benefits of the results of such valuable researches. All this has enabled these countries to achieve the status of leading Silk-Producing Countries of the World.

In short the countries named above, have turned this age-old Industry, almost into a Fine Art in all its branches. They have, by this means, achieved appreciable reduction in the cost of production of Cocoons and also in the cost of conversion of the Cocoons into RAW SILK, without in the least affecting the quality, but improving it at each stage.

Such marvellous achievements by these leading Silk producing countries would have to serve as an object lesson for other backward countries like India. They should try to emulate on the lines on which these advanced nations are carrying on all the operations connected with the Silk Industry, with the set purpose of obtaining production at workable cost to stand in competition with foreign countries, taking advantage of the comparitively cheaper labour cost in India.

It is rather unfortunate in India, specially in the States of Mysore, Madras, West Bengal and Assam, that inspite of an army of Executive Technical Officers, with advanced training in Japan, these officers, after their return to their home-land, should have so far failed to render any useful service to achieve appreciable improvements in the condition of this Industry, although a majority of them are holding key positions in this Industry. In fact they have been at it for over three decades, and yet, the Japanese ways, which they have learnt, have not been successfully transplanted in their respective States. Evidently, the Japanese Technique mastered by them appeared to have remained with themselves and has not been spread out on a field-scale. They have never-the-less extolled their Japanese methods, which, under these circumstances, are almost a hollow slogan in as much as they have failed to convince the Sericulturists about what it actually is, and how it could be adopted in India.

Considering all such conglomerations of things as are happening today, it is of course desirable for the concerned Governments to probe deep into this matter with a view to asrtain as to why the Japanese trained experts have failed to show any noticeable progress so far.

It has to be considered that, these officers going to Japan for such advanced training, without being conversant with the language of the country, are at a great disadvantage and unable to achieve the objectives for the benefit of their own country.

It is evident that a fair knowledge of a foreign language could hardly be learnt within a very short period. Specially learning of Japanese and Chinese Languages is not a matter of fact affair. The training period of officers sent to Japan, in recent years, does not exceed six months or a little over. It is, therefore, inconceivable as to how such officers could attain a fair knowledge of the Japanese language and also grasp the technique, which is imparted in their mother tongue, and make the best of the situation.

In this connection, it may be recalled, that Government Officers were being sent to Europe and far Eastern Countries, for a period of two years. But the period is now reduced to six months and they are sent mostly to Japan, where the Scientists and Technicians generally impart Sericultural knowledge only through their mother tongue-Japanese. Under these circumstances, the Officers deputed can hardly be expected to have been efficiently trained. Viewed in this perspective and for the valid reasons set out above, it would, of course, be preferable for the officers being sent to Western Countries—(Italy or France) for their advanced studies, the period of such deputation being also extended to at least two years, which would enable them to master the art in the best possible manner by learning the language of the country and derive real benefit and be able to demonstrate the advanced knowledge thus gained on their return to India. It may here be mentioned that, if Officers are deputed to Japan, even for a period of two years, it would not be enough, as they would have to face real difficulties in learning the language. So it would be desirable and beneficial for the Governments concerned to revise their present policy, for the simple reason that those who have returned to India after their training in Japan have all along not been quite able to successfully introduce the Japanese methods and improve the Sericultural Industry.

With the above preliminary observation, let me turn my attention to consider; whether it would be feasible to breed Silk Worms on a mass scale or it would be advantageous to carry on rearing purely as a Cottage Industry. All over the World, it is an established FACT that the rearing of silk Worms should be and must continue to be purely as a Cottage Industry, and should not be resorted to on a mass scale. This is due to the fact that Silk Worms do thrive splendidly well, so long as they are reared in limited quantities, and they could be well looked after by the family members without resorting to hired labour till the Worms reach their 5th Age. Silk Worms are so delicate that they could very well be compared to Rose-petals, Jasmine and Parijatha Flowers. As these petals or flowers cannot withstand any undue pressure or rough handling, so also the Silk-Worms cannot for a moment withstand any treatment given to them, if it is harsh and rude.

When such are the established facts, it is really surprising to see that the Kollegal Sericultural Expert (Madras), all at once developed the idea to rear the Silk Worms on a mass scale by breeding the pure Chinese white Races with a view to prepare D. F. Cross-breed Layings on a huge scale. With such a fantastic idea, the Expert sent up his scheme to the then Director of Industries and Commerce in the year 1943. He urged the Director to obtain early sanction of Government, to acquire at Hosur sufficient land with irrigation facilities to grow Bush Mulberry on 100 Acres of land, and to put up a number of buildings of modern type for Rearing Rooms, as well as for preparing Cross breed, Disease Free Layings on a large scale.

As His Majesty's Government then required enormous quantities of quality

Raw Silk, this scheme appealed to them, and the whole scheme was sanctioned in toto. In this connection the Expert also flew to China, hurriedly of course, only for a couple of months, to obtain in one lot so huge a quantity as 100 ozs. of Silk Worm Eggs of Pure & Virile Chinese Races, to start his gigantic scheme of mass production of Cross-breed Layings. The Farm and Grainage at Hosur started functioning from 1945 onwards. Since the scheme being a Filature Expansion affair, under His Majesty's Government, the Farm was called the HOPE FARM, as H.E Hope was then the Governor of Madras. Even though the Farm is now 11 years old, the achievements of this Farm have so far not been made public to indicate how the aims of the gigantic scheme have been practically realised. This is so, because no authoritative bulletins have been issued. The general Public interested in the Sericultural Industry are almost in the dark. The only conclusion, which one comes to in an irresistable manner is, that the results have not been so rosy as were embodied in the scheme and aimed at. This is the long and short story of the Hope Farm, on which high hopes were expected to be realised to revolutionize the Industry on such a spectacular scale.

In this connection, I recall an instance, which is still fresh in my memory, which I feel would interest the readers. In the year 1916-17, while I was in charge of the Premier Central Silk Farm at Channapatna, (a Taluk Head Quarters on the Bangalore Mysore Road.) I had the opportunity of taking round the Farm certain distinguished visitors, (Nawabs and Jagirdars of Hyderabad.) When they saw, how the tiny little Worm grew up rapidly in size, all within such a short period of 30 days, capable of producing such a precious Silk Fibre, they became greatly impressed and interested. They expressed their keen desire to transplant this new industry in their home lands in Hyderabad, on the extensive lands owned by them. It was not to run it as a Cottage Industry, but on a gigantic scale by planting. Bush Mulberry on thousands of acres, all to breed Worms in Lakhs of trays, and to reel the Cocoons thus produced by installing modern types of Filature Basins. However, they sought my opinion about their proposals. But when they were apprised of the great risks involved in undertaking such a huge scheme in a new place like Hyderabad, where this industry is not in vogue and the climatic and other conditions could not be found to be quite congenial for the healthy growth of these very delicate Worms; they then realised that the art of rearing Silk Worms was not a bed of roses, but full of thorns to be overcomed by diligent and steadfast perseverance of high order. They were then convinced of the difficulties and the risks involved in launching the scheme on a huge scale.

How and when the Mysore Gorernment made earnest attempts to develop this age-old Industry is also interesting. This dates back to the 1866. In that year, the Government engaged the services of an Italian Sericultural Expert by name DEVICCHI DE PICCIOLI. The Expert started his breeding experiments at Kangeri, (on the Mysore Bangalore Road). This work was started, not with the Italian Univoltine Races, but only with Japanese White Races, whose eggs were readily available then in Mysore. The outcome of it was the publication of the full text of "The Manual of Instructions for Sericulture in the Mysore Province," in a Supplemental Gazette dated the 30th April 1870, of which I have preserved a copy. The other ancient Italian Literature on "The Breeding of Silk Worms in Italy," known as CULTIVAZIONE DEI BIGATTI" by "PRETE ANTONIO ABBATE DI MILANO," which was published in the year 1808, i.e. 148 years ago, a copy of which I was able

to obtain, while I was in Italy for advanced studies.

According to PRETE ANTONIO, the Italian Seed Preparers were giving a bath to the Silk Worm Eggs in pure White Wine. (Grape Juice pure and simple). The Wine Manufacturers were also preparing the wine soley for this purpose and having a flourishing trade. The method of washing in wine was in vogue till the 19th century and it is not so now.

It is seen that in the Manual of Instructions, Sg. DE VICCHI DE PICCIOLI has not also made any mention about Italians giving a Wine bath to the Silk Worm Eggs. He has preferred the washing of the eggs in Salt Water Solution. This makes it clear that the method of washing the egges in Wine was not in vogue in Italy in 1868. The salt-water washing is perhaps a later development. But now, even the washing of the eggs in salt water is considered an out-of-date method. In those good old years in India, the only authoritative literature on Sericulture in english, known as the Hand Book on Sericulture, by Mr. N. G. Mukerji, published in 1899, was, of course, serving as a reference book for all educated Sericulturists till 1918. In this book the author attaches all importance to the washing of the Silk Worm Eggs in 2% Copper Sulphate Solution. This was successfully demonstrated by me during 1912-13, as the Officer in charge of introducing—modern methods of Breeding Silk Worms in the Mysore State. Inspite of excellent results obtained, this method of washing has somehow not found favour with the Japanese trained Experts. They have given it up, when they took charge of the Grainages preparing Cellular seeds. They have neither condemned this method of washing, nor have they shown reasons for giving it up.

After all the washings of eggs is with a view to remove the muddy coating over the eggs caused by the discharge of the Mother Moths prior to laying eggs. Such a coating, particularly over the Micropyle is bound to cause obstruction to the worms about to be hatched. The treating of the eggs with Copper Sulphate Solution is also for the embroys to resist the infection of FLACHERIE DISEASE.

The following are some of the useful hints on rearing Multi-Voltine Silk Worms in Cottages :—

Obnoxious things to be avoided in Breeding Chambers

These are, Tobacco in all its forms, Onion, Garlic, and strong scents of Mogul kinds. Any substances that are likely to give irritable smell, such a Chilly powder etc.,. All these obnoxious things coming in contact with the Worms, are detrimental to the healthy growth of the Worms, and they give rise to chances of killing the Worms in large numbers. Allowing persons to sleep in the Rearing Rooms is another horrid practice and it should be avoided. The reason is that the tainted breath and the most disagreeable smell of their perspiration would pollute the fresh air, so very necessary for the Worms. Such pollution of the air is also detrimental to the healthy growth of the Worms. Even, women in their monthly period are considered hygienically impure, and as such they should also be prevented from entering the Rearing Rooms during such periods.

The inhuman practice of gathering the Worms by hand after feeding and keeping them in small heaps, should also be avoided. Under such unhelpful conditions, the tiny Silk Worms awfully suffer by suffocation. It is high time that the Executive Officers responsible do effect improvements to prevent and avoid such rude and ruffian ways of handling the flower like and very delicate Silk Worms. They should try to introduce modern methods of separating the tiny Worm with the aid of perforated papers, (Italian method) which is anyday a fool-proof method. Steps should be taken to introduce this system without much loss of time. I am not in favour of the Japanese method of tapping the hatched Worms before feeding on tissue papers. The Japanese do it for the purpose of ascertaining the yield of the Raw Cocoons obtained from a

MOMME of hatched Worms, as well as to know the quantity of leaves consumed by the Worms from the time of hatching up to the time of mounting.

The tapping system would not work well in Mysore, Madras, Bengal, and Assam, as the Breeders in these parts are far behind the times and not familiar with the handling of sensitive laboratory scales in their Breeding Rooms.

Some Rearers are in the habit of covering the eggs with the entire leaf, though tender, just prior to the eggs hatching. This is resorted to by Breeders in Mysore, Madras, Bengal and Assam with the idea that the hatched out Ant-Worms could easily crawl and feed on the leaves. Covering the eggs with unchopped leaves has its own disadvantages. The simple reason is, that by so doing, the leaves would absorb the heat of the Ant-Worms just hatched out, and would in a way impede their ECCALEOBION. It is therefore essential to give the hatched Worms their first feed only after 95% of the eggs have hatched out. The Worms should be separated with the aid of perforated paper without causing any kind of disturbance to the delicate Worms. For the first 3 or 4 days after hatching, they should be given frequent feedings. The number of feedings to be given in a day depends on the climatic conditions and the behaviour of the Worms. The quantity of chopped leaves fed should not be in very thick layers, but should be in a very thin and even layer, taking care to see that each individual Worm in the tray receives its due share of food in each feeding. If the Worms, by chance, miss even a single feeding, it would seriously affect the growth, with the result that the Worms of the same batch will not be quite uniform in size. Such unequal sizes in a batch will cause confusion while going to Moults simultaneously. Even though the Worms are tiny, yet they are voracious eaters of leaves.

Till 1920, the Moriculturists in Mysore and in Madras were growing the variety of Mulberry known as *"Sultan Kaddy,"* which is said to have been introuced by Tippu Sultan. The Breeders by experience found the leaves of this particular variety to be of great nutritive value. It is a pity that this variety is practically extinct now, particularly after the advent of the Japanese varities of Mulberry, that are propogated from 1921 and onwards. Though these imported varieties of Japanese Mulberry are now standing for over three decades, it has not so far solved the problem. The new varieties do not seem to be popular, and have not so far replaced the existing variety. No steps have been taken to retrace the extinct variety (Sultan Khaddi) pronounced to be the best variety for the Mysore Multivoltine Races. It is therefore desirable for the Department to retrace the extinct "Sultan Khaddi", for its popularisation once again. This should not be construed to mean that the Japanese imported varieties should be replaced. If they prove to be the best variety, they should be made to replace the existing variety of Mulberry.

Light and its importance in rearing Silk Worms

It is a mistaken idea of the Rearers to keep the Worms, in their earlier stages, in the dark corners of the Rearing Chambers. They should know: Light is an important factor in the earlier stages to facilitate their healthy growth. Light has to be gradually reduced as the Worms grow up.

Extension of Beds

As all Sericulturists are aware, the growth of the Silk Worms, is very rapid, and their growth is 30 times their original size, all in the course of 30 days. They put on 8000 times their original weight during this period. It is therefore necessary to provide enough moving space for the Worms as they grow, so that they might breath freely through their STIGMATES or SPIRACLES, which are 18 in number, 9 on each side of their body. By overcrowding the Worms, they cannot possibly gives out their foul air and take in fresh air. Besides due to exigence of moving space, they would be obliged to ride one over the other and they are bound to soil the Worms below them by their own excretion. Such unhealthy surroundings greatly affect the insects' health. The Japanese Rearers, whenever they see that the Worms are kept over crowded in trays, in any of their stages, their cynical way of expression is, that the Worms would nodoubt like to be in company with other Worms, but not by rubbing their shoulders. Whereas Italian Rearers

put it in another way, of course, in a blunt manner: "Worms kept too thick, particularly, in their earlier stages are bound to perish either before they start spinning or in their Cocoon stage itself, either as Prepupa or as Chrysalid or as Moth."

Successful harvesting of good Cocoons depends mostly on the very skillful way in which the Breeders manage the Worms in their Moulting periods. The term "MOULT" need not confuse the non-sericulturists. It simply means the Worm's act of casting off its external skin in order to keep pace with its rapid growth. Many Rearers are under the mistaken idea, that these Moulting periods are their off days, as the Worms in their Moulting periods give up their food for full 24 hours and try to remain in dorment condition keeping the thorax part of the body upwards and remain in that position quite unmoved for full 24 hours. Even though for all outward purposes, they almost look like a wax model. The internal activities for casting off the old skin and the formation of the new skin goes on uninterruptedly for one full day, is indeed the nature's marvel.

"MOULT" is a vast subject to be dealt with in this article. So, aspirant technicians are advised to go through the interesting article under the Caption: "SILK WORM MOULTS and SOME PRACTICAL SUGGESTIONS", specially contributed by me, to the Rural India Journal of January and February 1946 issue. The back number of this could be obtained from the Editor, Rural India, Iswardas Mansions, Nana-Chowk, Bombay.

Mounting and Spinning of Cocoons

The Ripe Worms are mounted either in Spinning Screens, known as "CHANDRAKIES" or through other media. But utmost care is necessary. The Ripe Worms should not be placed too thick in the Chandrakies. The Worms should have sufficient space to move their Thorax part of the body, to and fro, on either side and above to enable to attach its filament in all convenient corners to form their hammocks first and then settle down to complete their temporary prisons or shelters technically termed "COCOONS". The Ripe Worms lay out their filaments in an orderly way in the form of loops all round. The layers are laid side by side, each single loop being in the shape of the figure 8. Besides care should be taken to see that the temperature of the Spinning Room is not below 26°C to 27°C. In inclement weather conditions, if the Spinning Hall is found to be too chill steps should at once be taken to keep cowdung cake embers free from smoke in the four corners of the Hall. If the Hall is found to be too hot during the spinning period, the walls and floor etc., should be sprayed with water to bring down the temperature to 26°C to 27°C is also necessary.

It is a false economy on the part of the Rearers to hire out damaged Chandrakies, either with wide gaps or in some parts even without spiral containing black dead Worms still sticking on the damaged Chandrakies just for the sake of saving a couple of annas over each CHANDRAKEY. It is, therefore, best and worthwhile to pay the prescribed hire and select only good Chandrakies well in advance and expose them to the sun. Should the day happen to be cloudy they should be warmed up by cow-dung cake embers.

Harvesting Cocoons.

In Mysore, particularly in Bangalore District, and that too in Channapatna, where the Premier Central Silk Farm is in existence for over four decades, the Sericulturists continue to resort to the horrid practice of harvesting the Cocoons, all within a period of 24 hours, after Mounting. Thus, the Worms are prevented from spinning through their full period, which automatically decreases the maximum length of filament in such Cocoons. For instance, the Mysore Race is capable of giving a reelable yardage of 350 yards of Filament, if they are allowed to spin their Cocoons for full 72 hours after Mounting. By harvesting the Cocoons in about 24 hours, a third of the length, about 120 yards of Filament is obtained by reeling such Cocoons. In short, this is a willful distruction of the precious Reelable Filament.

It is not a desirable practice to spread the Cocoons in trays without cleaning and grading them. They should be cleaned and weed out all unwanted Cocoons, dried pieces of bamboo, litter etc., before marketing. By this means they could get a better price for their Cocoons Even in transporting them, irrespective of their use either for Reeling or for Reproduction, utmost care should be taken. Raw Cocoons, heavily loaded in country carts and transported to distant places in village parts over undulated roads and full of ruts, the delicate Cocoons on reaching the destination, would be found to be badly fermented and the bottom layers would be found to be awfully crushed due to lot of joltings. All such crude ways should be avoided, by arranging to transport Cocoons in 'U' shaped baskets upto the main road on head loads and then taken in Bus to their destination.

While writing this article, I had the occassion to go through Deccan Herald Weekly Magazine, dated the 1st July 1956, in which an article under the Caption "For Crisp delight have a bite of Insects." In that it is seen that the Chinese eat the Chrysalids, whereas the Japanese, during World War II, due to acute shortage of butter, made the best use of the unhealthy adult Silk Worms. They dissected them and scrapped all the fatty substance and mixed them with vegetable oil and other palatable powdered ingredients for the preparation of artificial butter similar to that of "MARGARINE."

It is learnt that some decades ago, the Japanese are said to have made use of the fully dried Chrysalids, which they crushed and hulled into fine powder. The powder, after de-odourising it, packed them in air-tight tins and marketed it. This was stated to be just like SANOTAGIN. In this way, the Japanese have all along been a wonderful nation capable of making wealth even out of filth.

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